

CHAPTER 112  
SANITARY LANDFILLS: BIOSOLIDS MONOFILLS

[Prior to 12/11/02, see 567—Chs 102, 103, 110]

**567—112.1(455B) Scope and applicability.** This chapter details the plan and operating requirements for all sanitary landfills accepting only municipal sewage sludge (i.e., biosolids). All sanitary landfills accepting only municipal sewage sludge (i.e., biosolids) must conform with the provisions of these rules. This chapter also pertains to the hydrologic monitoring system standards for these solid waste disposal facilities.

**567—112.2(455B) Permit required.** No public or private agency shall construct or operate a sanitary disposal project without first obtaining a permit from the director.

**567—112.3(455B) Types of permits.** There are four types of permits issued by the director.

**112.3(1) Sanitary disposal project permit.** This permit is issued by the director under the authority of Iowa Code section 455B.305 for sanitary disposal projects which comply with the requirements described in 567—Chapters 102 to 106, 109 to 116, and 118 to 122. Such permits are issued for a term of three years, and are renewable for similar terms.

*a.* Applications for renewal shall be received at the department office at least 90 days before the expiration date of the existing permit. For application forms, see 567—100.3(17A,455B).

*b.* The department shall conduct an inspection of the sanitary disposal project following receipt of the application for renewal. Following the inspection, the permit holder shall be notified of all measures needed to bring the sanitary disposal project into conformance with Iowa Code chapter 455B and these rules.

*c.* A permit shall be renewed when a properly completed application has been received and all corrective measures identified in 112.3(1) “*b*” have been completed.

**112.3(2) Temporary permit.** This permit is issued by the director under the authority of Iowa Code subsection 455B.307(1) for solid waste disposal sites which do not comply with the requirements of Iowa Code chapter 455B and these rules. Such permits are issued for a term of one year and are renewable. Temporary permits may be renewed if the director finds that the public interest will be best served by granting a renewal and the applicant has complied with the terms of the previous temporary permit.

*a.* Temporary permits shall incorporate as a condition a compliance schedule that specifies how and when the applicant will meet the requirements of Iowa Code chapter 455B and these rules.

*b.* The decision of the director whether to issue a temporary permit, which is discretionary, shall be a final decision. Once a temporary permit has been issued, it may be suspended or revoked only as provided in Iowa Code section 455B.305 and 567—Chapter 7.

**112.3(3) Developmental permit.** The director may issue a developmental permit for construction and operation of a sanitary disposal project which is not specifically described in these rules if the permit applicant demonstrates at a public hearing that the proposed project can provide satisfactory disposal of solid waste without adverse health-related or environmental effects.

*a.* No such permit shall be issued until the director, after public hearing, considers and approves the proposed project.

*b.* A developmental permit shall be issued for a term of no less than one year and no more than three years.

*c.* A developmental permit may be renewed if the director finds, following public hearing, that the sanitary disposal project provided satisfactory disposal of solid waste without adverse health-related or environmental effects over the term of the prior permit.

**112.3(4) Closure permit.** This permit is issued by the director under the authority of Iowa Code section 455B.305 for sanitary disposal projects which no longer accept solid waste. Such permits are issued for a term of 30 years. If the postclosure period is extended, the term of subsequent renewal of the permit will be determined on a site-specific basis. A sanitary disposal project shall require a

closure permit until the department determines that postclosure maintenance, postclosure monitoring, and operation of the required leachate control system are no longer necessary.

*a.* Application shall be filed at the time of department notification of intended closure as required by this rule.

*b.* The application for issuance of this permit shall be based on a previously approved comprehensive plan and other rules adopted pursuant to the authority of Iowa Code section 455B.306.

*c.* This permit shall require submission of an annual audit report detailing the status of the financial instrument and other funds as required to guarantee completion of postclosure and monitoring requirements.

*d.* This permit may be modified by the issuance of an amendment by the department. Requests for permit amendments may be initiated by the department or by the permit holder.

*e.* At the end of the applicable postclosure period, and upon satisfactory completion of all required postclosure activities as established by Iowa Code chapter 455B, written notification shall be issued by the director stating that a permit is no longer required for the facility.

**567—112.4(455B) Applications for permits.**

**112.4(1)** *Application requirements for permits and renewals.* See 567—100.3(17A,455B).

**112.4(2)** *Time limit on submittal of information.*

*a.* Sanitary disposal project permit applications. If an application for a sanitary disposal project permit is found by the department to be incomplete, the applicant will be notified of that fact and of the specific deficiencies. Thirty days following such notification, the application may be returned by the department as incomplete without prejudice to the applicant's right to reapply. The applicant may be granted, upon request, an additional 30 days to complete the application.

*b.* Application for renewal or amendment of a sanitary disposal project. If an application for a sanitary disposal project permit renewal or amendment is found by the department to be incomplete, the applicant will be notified of that fact and of the specific deficiencies. Thirty days following such notification, the application may be denied by the department.

**567—112.5(455B) Preparation of plans.** All plans and specifications submitted in the application for a sanitary disposal project permit or a developmental permit shall be prepared in conformance with Iowa Code chapter 542B and shall be submitted in triplicate.

**567—112.6(455B) Construction and operation.** All sanitary disposal projects shall be constructed and operated according to the plans and specifications as approved by the department and the terms of the permit. The approved plans and specifications shall constitute a term of the permit.

**567—112.7(455B) Compliance with rule changes.**

**112.7(1)** *Design and construction.* Sanitary disposal projects designed and constructed in accordance with rules in effect at the time of construction shall not be required to be redesigned or reconstructed due to subsequent rule changes unless the department finds that such facilities are causing pollution. Such facilities shall be brought into compliance with rules in effect at the time of reconstructing, enlarging, or otherwise modifying the sanitary disposal project, or at the time of permit renewal.

**112.7(2)** *Operation.* If any new rule conflicts with an operating procedure prescribed in the engineering plans or the permit of a sanitary disposal project, the operation shall conform with the new rule.

**567—112.8(455B) Amendments.** Sanitary disposal project permits, temporary permits, and developmental permits may be modified by the issuance of an amendment by the department, except as provided in 112.7(1).

**567—112.9(455B) Transfer of title and permit.** If title to an operational sanitary disposal project is transferred, and the transferee desires to continue operation of the project, the transferee shall apply in writing to the department within 30 days of the transfer for a transfer of the permit.

**112.9(1)** The department shall transfer the permit when it determines that the sanitary disposal project is in compliance with Iowa Code chapter 455B and these rules and the terms of the permit, and that the transferee possesses the equipment and personnel to operate the project in conformance with Iowa Code chapter 455B and these rules and the terms of the permit.

**112.9(2)** No permit shall be valid after 60 days following transfer of title, unless the permit has been transferred by the department to the new titleholder pursuant to this rule.

**567—112.10(455B) Permit conditions.** Any permit may be issued subject to conditions specified in writing which are necessary to ensure that the sanitary disposal project can be constructed and operated in compliance with these rules.

**567—112.11(455B) Effect of revocation.** If a permit for a sanitary disposal project held by any public or private agency is revoked by the director, no new permit shall be issued to that agency for that disposal project for a period of one year from the date of revocation. Such revocation shall not prohibit the issuance of a permit for the disposal project to another public or private agency.

**567—112.12(455B) Inspection prior to start-up.** The department shall be notified when the initial construction of a sanitary disposal project has been completed in order that an inspection may be made to determine that the project is constructed as designed. No solid waste shall be accepted by a sanitary disposal project until that project has been inspected and approved by the department.

**567—112.13(455B) Primary plan requirements for all sanitary disposal projects.** Every application for any permit issued by the department shall include the following. In addition, every application shall include the particular information required by the chapter describing the type of project to be constructed.

**112.13(1)** The name, address and telephone number of:

- a. Owner of site where project will be located.
- b. Permit applicant.
- c. Official responsible for operation of project.
- d. Design engineer.
- e. Agency to be served by the project, if any.
- f. Responsible official of agency served, if any.

**112.13(2)** A legal description of the site.

**112.13(3)** A map or aerial photograph locating the boundaries of the site and identifying:

- a. North or other principal compass points.
- b. Zoning and land use within one-half mile.
- c. Haul routes to and from the site with load limits or other restrictions.
- d. Homes and buildings within one-half mile.
- e. Section lines or other legal boundaries.
- f. Any nearby runway used or planned to be used by turbojet or piston-type aircraft at FAA-certified airports.

**112.13(4)** Type, source, and expected volume or weight of waste to be handled per day, week or year.

**112.13(5)** An organizational chart.

**112.13(6)** A detailed description of the disposal process to be used.

**112.13(7)** A table listing the equipment to be used, its design capacities and expected loads.

**112.13(8)** A contingency plan detailing specific procedures to be followed in case of equipment breakdown, maintenance downtime, or fire in equipment or vehicles, including methods to be used to remove or dispose of accumulated waste.

**112.13(9)** Proof of the applicant's ownership of the site or legal entitlement to use the site for the disposal of solid waste for the term of the permit for which application is made.

**112.13(10)** Closure/postclosure plan.

*a.* A closure/postclosure plan shall be submitted which:

(1) Details how and when the facility will be closed in accordance with applicable requirements of this chapter.

(2) Describes the proposed groundwater monitoring plan, leachate control system, and site inspection and maintenance activities necessary to comply with this chapter.

(3) States the name, address and telephone number of the person or office to serve as a contact with regard to the facility during the postclosure period.

*b.* The closure/postclosure plan shall be submitted at the time of the first permit renewal after January 15, 2003, but not less than 180 days prior to closure.

**112.13(11)** Such other information as may be required by the director.

**567—112.14(455B) Hydrologic monitoring system planning requirements.**

**112.14(1)** All plans, specifications and other documentation required herein must be developed by an engineer registered in Iowa.

**112.14(2)** All sanitary disposal projects shall conduct a soil and hydrogeologic investigation which conforms to the requirements of this chapter. The purpose of soil and hydrogeologic investigation is to obtain data to determine potential routes of contaminant migration from a site via groundwater. The rules that follow set forth minimum requirements for such investigations. Additional work and use of other methods (e.g., geophysical techniques) are encouraged.

**567—112.15(455B) Soil investigation.**

**112.15(1)** *Soil borings.*

*a. Number of borings.* A sufficient number of soil borings shall be made to accurately identify the hydrogeologic variations of the site. For new sites, the minimum number of borings required is 10 for sites of less than 10 acres, 20 for sites of 10 to 50 acres, and 20 plus an additional boring for every 10 acres above 50 acres for sites larger than 50 acres. Fewer borings may be needed for existing sites, depending on previous work done at the site. Also, no borings will be required in existing fill areas. The department may require additional borings based on the geological complexity of the site.

*b. Depth of borings.* All borings must extend a minimum of 25 feet deep and at least 10 feet deep below the water table. However, borings in proposed fill areas shall be terminated 10 feet above the uppermost aquifer or be grouted to provide such separation. At least half the borings located outside the existing or proposed fill area shall extend 10 feet into the uppermost aquifer, 50 feet below the water table, or 10 feet into bedrock. At least one boring shall extend 10 feet into bedrock or 100 feet below the lowest ground surface elevation.

*c. Boring method.* Borings shall comply with the applicable portions of rule 112.23(455B). The preferred boring method is hollow stem auger, although it may be necessary to use other methods at greater depths and in bedrock. When wet drilling methods are used for boring in which monitoring wells or piezometers are installed, the drilling fluid and methods and development procedures shall be approved by and documented with the department.

*d. Assurance that soil boring samples have been taken at the site.* The soil boring samples must be kept by the permit applicant until the permit is issued and must be made available to the department if the department requests them.

**112.15(2)** *Soil samples.* Samples shall be collected at 5-foot intervals and at every change in stratum. These samples shall be obtained using a split spoon sampler and the procedures of the standard penetration test, conducted in accordance with American Society of Testing and Materials (ASTM) Standard D1586. This test simply counts the blows of a 140-pound hammer falling 30 inches on the sampler per foot penetration of the sampler. A minimum of one undisturbed Shelby tube sample shall be obtained in the uppermost cohesive stratum at or below the lowest depth at which solid waste will be disposed of. Shelby tube sampling shall be in accordance with ASTM Standard D1587. Samples shall

be clearly marked, preserved, and maintained for future inspection. Samples selected for laboratory analysis shall be preserved and transported to the laboratory in accordance with ASTM Standard D422.

**112.15(3) Laboratory test of discrete soil samples.** Laboratory tests of discrete soil samples shall be conducted to correlate strata between soil borings, obtain permeability data on each stratum, and design monitoring wells.

*a. Permeability tests.* Permeability tests using a constant-head or falling-head permeameter shall be run on a minimum of one sample from each Shelby tube sample. Each sample shall be from a different soil boring representing a different area of the site.

*b. Grain size distribution.* Grain size distribution tests shall be conducted on a minimum of one sample from each distinct stratum. Analysis shall be conducted in accordance with ASTM Standards D422 and D1140. Estimates of permeability shall be developed for each sample tested based on grain size distribution and standard penetration blow counts.

**567—112.16(455B) Hydrogeologic investigation.**

**112.16(1) Groundwater level measurements.** The elevation of the water table shall be determined at or near the location of each soil boring which penetrates the water table. The water table may be determined using a completed water table monitoring well, or piezometer. The bottom of a piezometer used to measure water table elevation shall be no more than 5 feet below the water table.

The apparent horizontal groundwater flow direction shall be determined based on water table measurements. Vertical groundwater flow shall then be assessed in at least two profiles approximately parallel to the apparent horizontal flow direction. Vertical groundwater flow shall be assessed using at least two well clusters per profile. Each well cluster shall contain a water table monitoring well or piezometer and additional water level monitoring points based on site conditions as follows:

*a.* If the water table is in the uppermost aquifer, one additional water level monitoring point shall be located near the base of the aquifer or at least 20 feet below the base of the water table monitoring point. This additional monitoring point may not be required if the aquifer is less than 20 feet thick.

*b.* If the uppermost aquifer is less than 50 feet below the water table, an additional water level monitoring point shall be located at the top of the aquifer.

*c.* If the uppermost aquifer is more than 50 feet below the water table, additional water level monitoring points shall be placed at depths of 30 feet and 50 feet below the water table.

*d.* If required, the one deeper soil boring into bedrock shall be used as a site for one well cluster. Water table monitoring points in this cluster shall correspond to the other well cluster used for a profile. In addition, water level monitoring points shall be placed at the bottom of the boring and, if possible, at the top and bottom of the uppermost aquifer. Groundwater level measurements shall be made after the water levels have stabilized in the monitoring point, at least 24 hours after completion and bailing of the monitoring well, or installation of the piezometer. The water level in existing wells shall be observed and recorded prior to bailing. Each set of water level measurements shall be made in as short a time frame as possible not to exceed 8 hours.

**112.16(2) In-situ permeability tests.** In-situ permeability tests shall be conducted on each monitoring well and piezometer in each well cluster.

*a. Pumping test.* If more than one monitoring point is located in the uppermost aquifer, a pumping test shall be conducted at one or more upper aquifer monitoring points. A pumping test involves pumping at a constant rate from one well while observing water levels in other wells. The pumping rate shall be as high as possible without dewatering the well. Water level measurements in other uppermost aquifer wells shall be measured at frequent intervals near the start of the test and then at progressively longer intervals (e.g., 1-minute intervals to 10 minutes, 5-minute intervals to an hour, 15-minute intervals to 2 hours, and half-hour intervals thereafter). Continuous water level recording is preferable.

Water levels in wells not located in the uppermost aquifer shall be recorded throughout the test at regular intervals (e.g., every half hour). Water levels in all wells shall be measured 24 hours prior to the test and just before the test. The test duration shall be at least 4 hours and continue until a stabilized drawdown condition is observed. Longer tests may be necessary if other uppermost aquifer monitoring

points are slow to respond. Water level readings shall be recorded through the recovery phase of the water table.

*b. Bail and slug tests.* Monitoring wells and piezometers located in materials with low permeabilities shall be tested using bail or slug tests. These tests involve rapidly removing or adding a known volume of water to a well and then recording water levels in the well as the well recovers to its original level. Typically, the necessary frequency of measurements will be similar to that required of pumping tests. In materials of very low permeability, less frequent measurements are necessary. In materials of higher permeability, more frequent measurements may be necessary.

**567—112.17(455B) Hydrologic monitoring system planning report requirements.** The hydrologic monitoring system planning report shall contain a description of field investigations and presentation of results including a description of the field and laboratory testing methods; a presentation of the test results and field measurements; documentation of a reasonable effort to inventory all active, unused, and abandoned wells within one mile of the facility; and the identification of all public water supply wells and wells with water withdrawal permits pursuant to 567—Chapters 50 to 52 within three miles of the facility. Well logs, other available information on well construction, static water levels, and usage shall be obtained. The well inventory shall be based on thorough reviews of state and local collections of well logs and, when possible, interviews or surveys of well owners. Also to be included are maps showing the location of soil borings, other field tests/measurements, and existing wells.

**567—112.18(455B) Evaluation of hydrogeologic conditions.**

**112.18(1)** Based on soil boring and other available information, a description of the site geology shall be made. The description shall include preparation of geologic cross sections of sufficient number and spacing (no fewer than four at every site) to adequately define all areas of the site and of sufficient detail to adequately depict major stratigraphic and structural trends and reflect geologic structural features in relation to groundwater flow. Each pair of cross sections must be as near to perpendicular as possible to adequately portray the site geology.

**112.18(2)** A description of the hydrogeologic unit(s) within the saturated zone shall be made including thickness; depth; hydraulic properties, such as transmissivity and storage coefficient or specific yield; description of the role of each as confining bed, aquifer, or perched saturated zone and its actual or potential use as a water supply aquifer.

**112.18(3)** All groundwater flow paths from the site shall be identified, including both horizontal and vertical components of flow. A contour map of the water table shall be presented showing horizontal flow paths. A potentiometric surface map of the uppermost aquifer showing horizontal flow paths shall also be presented, if different from the water table. Vertical flow paths shall be shown in at least two profiles approximately parallel to the direction of horizontal flow. Vertical flow paths shall be determined by water level measurements from clustered wells at different depths, if possible. An evaluation of vertical groundwater flow based on the hydrologic properties of the various strata encountered at the site, estimated groundwater flow and recharge rates, and known information on hydraulic head shall also be made.

**112.18(4)** The seasonal, temporal and artificially induced variations in groundwater flow shall be evaluated. Temporal variations occur due to natural events, such as rainfall. The addition of tile lines, removal of overburden, or deposition of wastes would constitute artificially induced variations.

**112.18(5)** Surface water flow paths from the site shall be identified on topographic contour maps.

**567—112.19(455B) Monitoring system plan.** A hydrologic monitoring system shall be designed to intercept the groundwater and surface water flow paths from the site. The plan shall include proposed locations and depths for monitoring wells in accordance with monitoring well siting criteria in rule 112.22(455B). Monitoring wells shall be designed in accordance with rule 112.23(455B). The surface water monitoring plan shall include monitoring points on all standing and flowing bodies of water which will receive surface runoff or groundwater discharge from the site. For streams, sampling points upstream and downstream of areas of potential impact from the site shall be selected.

**567—112.20(455B) Sampling protocol.** At a minimum, the sampling protocol must include the following:

1. Order in which monitoring points are to be sampled, all tests and procedures needed at each monitoring point and the order in which these procedures will be carried out, equipment and containers to be used, procedures and precautions for their use; precautions to avoid introducing contaminants from outside sources into monitoring wells or samples; and how equipment must be cleaned between uses;
2. Procedures for evacuating each monitoring well prior to each water quality sampling;
3. Procedures for handling field blanks and other quality assurance samples at the facility and in transit to and from the laboratory;
4. Procedures for field filtration of samples, if required;
5. Procedures for sample preservation;
6. Procedures for sample collection, labeling and handling at the facility and during transport to the laboratory;
7. Procedures for recording field observations and measurements;
8. Procedures for records maintenance and data analysis; and
9. Procedures for sampling surface water monitoring points including exact sampling locations and depths.

**567—112.21(455B) Monitoring well maintenance and performance reevaluation plan.**

**112.21(1)** A monitoring well maintenance and performance reevaluation plan shall be included as part of the hydrologic monitoring system plan. The plan shall ensure that all monitoring points remain reliable.

**112.21(2)** The plan shall provide for the following:

- a. A biennial examination of high and low water levels accompanied by a discussion of the acceptability of well location (vertically and horizontally) and exposure of the screened interval to the atmosphere.
- b. A biennial evaluation of water level conditions in the monitoring wells to ensure that the effects of waste disposal or well operation have not resulted in changes in the hydrologic setting and resultant flow paths.
- c. Annual measurements of well depths to ensure that wells are physically intact and not filling with sediment.
- d. Every five years conduct in-situ permeability tests on monitoring wells to compare test data with those collected originally to determine if well deterioration is occurring.

**567—112.22(455B) Monitoring well siting requirements.**

**112.22(1) Downgradient monitoring wells.** Downgradient monitoring wells must be located to provide a high level of certainty that releases of contaminants from the site can be promptly detected. Downgradient monitoring wells shall be placed along the site perimeter, within 50 feet of the planned liner or waste boundary unless site conditions dictate otherwise, downgradient of the facility with respect to the hydrologic unit being monitored. For those facilities which are long-term, multiphase operations, the department may establish temporary waste boundaries in order to define locations for monitoring wells. The convergence of groundwater paths to minimize the overall length of the downgradient dimension may be taken into consideration in the placement of downgradient monitoring wells.

**112.22(2) Water table wells.** At least three downgradient water table monitoring wells shall be installed at each facility. The maximum spacing between wells shall be 600 feet.

**112.22(3) Uppermost aquifer monitoring wells.** If different from water table monitoring wells, at least three uppermost aquifer monitoring wells shall be installed at each facility. Uppermost aquifer monitoring wells shall be spaced no more than 600 feet apart. If the uppermost aquifer is located more than 50 feet below the water table, this requirement may be relaxed, although at least one downgradient uppermost aquifer monitoring well will be required.

**112.22(4) Other downgradient monitoring wells.** Additional downgradient monitoring wells will be required if the water table and uppermost aquifer monitoring wells do not intercept most vertical flow paths from the site. In such situations, monitoring wells shall be placed at the appropriate depths to intercept the remaining flow paths and shall be spaced no more than 600 feet apart.

**112.22(5) Upgradient monitoring wells.** Upgradient monitoring wells shall not be affected by the site. At least one upgradient monitoring well shall be installed into each stratum being monitored by downgradient monitoring wells. If it is not possible to actually locate a monitoring well upgradient of the site, the well shall be placed as near the site as feasible without being affected by the site.

**112.22(6) Monitoring point identification system.** The various types of monitoring points shall be identified as follows:

a. Monitoring Well	MW#	_____
b. Surface Water Monitoring Point	SW#	_____
c. Piezometer	PZ#	_____

Each monitoring point must have a unique number, regardless of the type of monitoring point, and that number must never change.

**567—112.23(455B) Monitoring well/soil boring construction standards.**

**112.23(1) General considerations.**

a. Contractors involved in construction of monitoring wells and piezometers and soil boring activities shall be registered with the department as required in 567—Chapter 82.

b. To the extent possible, all monitoring well construction materials must not absorb, desorb, react or otherwise alter the screened soil stratum or the quality of the groundwater being sampled. Galvanized metal, glues, welding solvents, pipe thread lubricants and other foreign substances must not be used.

c. All monitoring well construction materials must be protected from contamination prior to installation.

d. A typical cross section of a properly constructed monitoring well is shown in Figure 1 at the end of this chapter.

**112.23(2) Casings.**

a. As a minimum, the diameter of the inner casing (see Figure 1) of a monitoring well must be at least 2 inches.

b. Plastic cased wells must be constructed of materials with threaded, nonglued joints which do not allow water infiltration under natural subsurface pressure conditions or when the well is evacuated for sampling.

c. Well casings must provide structural stability to prevent casing collapse during installation as well as drill hole integrity when installed. Flush joint casing is required for small diameter wells installed through hollow stem augers.

d. Well casings must be constructed of inert materials such as polytetrafluorethylene, stainless steel or polyvinyl chloride. The department may approve other casing materials if the owner or operator can demonstrate that the material has a low potential for biasing the water quality parameters of samples.

The department may approve the construction of composite well casings (casings with less inert materials in the unsaturated zone).

**112.23(3) Well screens.**

a. Slot size will be based on sieve analysis of the sand and gravel stratum or filter pack. The slot size must hold out 35 percent to 60 percent of the formation material and not less than 90 percent of the filter pack.

b. Slot configuration and open area must permit effective development of the well.

c. Screen length. Maximum screen length shall be 10 feet except for water table wells in which the screen must be of sufficient length to accommodate expected seasonal fluctuations of the water table. The screen shall be placed 5 feet above and below the observed water table, unless local conditions are

known to produce greater fluctuations. Screen length for piezometers shall be 2 feet or less. Multiple screened single-cased wells are prohibited.

**112.23(4) Filter pack.**

a. To prevent other materials from coming in contact with the well screen, the filter pack shall extend 18 inches above and 12 inches below the well screen.

b. Size must be based on sieve analysis of sand and gravel stratum. The filter pack material must be 2.5 to 3 times larger than 50 percent grain size of the zone being monitored.

**112.23(5) Grouting.**

a. The annular space above the filter pack must be sealed with expanding cement or bentonite grout. The vertical dimension of this seal must be a minimum of 3 feet.

b. The annular space between the seal and to just below the frostline must be backfilled with an impervious material such as bentonite grout or expanding cement.

c. The remaining annular space must be sealed with bentonite grout to the ground surface.

d. Grouting materials must be installed from the top of the filter pack up in one continuous operation with a tremie tube.

**112.23(6) Well protection.**

a. Plastic cased wells. A protective metal casing must be installed around the well casing. The inside diameter of the protective metal casing shall be at least 2 inches larger than the outside diameter of the well casing. The protective metal casing shall extend from a minimum of 1 foot below the frostline to slightly above the well casing top. The protective casing should be shortened or omitted if it covers part of the well screen. The protective casing shall be sealed or immobilized with a concrete plug around the outside. The bottom of the concrete plug must extend at least 1 foot below the frost-line. The concrete plug shall be shortened if it covers part of the well screen. The top of the plug shall be extended approximately 3 to 6 inches above the ground surface and shall slope away from the well approximately 3 feet. Soil may be placed above the plug. The inside of the protective casing shall be sealed with a bentonite grout. A vented cap shall be placed on the well casing and a protective locking cap on the metal casing. The lockable cap must be kept locked when the well is not in use.

b. Metal cased wells. The concrete plug shall be extended from at least 1 foot below the frostline to approximately 3 to 6 inches above the ground surface and sloped away from the well approximately 3 feet. Soil may be placed on top of the concrete plug. A vented, locking cap shall be placed on the casing. The lockable cap must be kept locked when the well is not in use. See Figure 1.

c. To protect against accidental damage, a ring of brightly colored posts or other protective devices must be installed around all wells.

**112.23(7) Well drilling.**

a. The owner or operator must ensure that in all phases of drilling, well installation and completion the methods and materials used do not introduce substances that may alter the results of water quality analyses.

b. Well drilling equipment coming into contact with contaminants in the borehole or aboveground must be thoroughly cleaned to avoid spreading contamination to other depths or locations. Contaminated materials or leachate from wells must not be discharged onto the ground surface or into ponds or streams so as to cause environmental harm in the processes of drilling or well development.

c. The owner or operator must ensure that, at a minimum, the following well design and construction log information be retained at the site and a copy of this information be sent to the department:

- (1) Date/time of construction;
- (2) Name and address of the driller;
- (3) Drilling method and drilling fluid used;
- (4) Soil sampling methods;
- (5) Surveyed location ( $\pm 0.5$  ft.);
- (6) Soil and rock classifications;
- (7) Field observations;
- (8) Well name/number;

- (9) Borehole diameter and well casing diameter;
- (10) Well depth ( $\pm 0.1$  ft.);
- (11) Water level measurements;
- (12) Drilling and lithologic logs;
- (13) Casing materials, inside diameter and weight or wall thickness;
- (14) Screen materials;
- (15) Casing and screen joint type;
- (16) Screen slot size/length;
- (17) Filter pack material/size (depths from \_\_\_ to \_\_\_);
- (18) Filter pack volume;
- (19) Filter pack replacement method;
- (20) Sealant materials (depths from \_\_\_ to \_\_\_);
- (21) Sealant volume;
- (22) Sealant placement method;
- (23) Grouting schedule and materials;
- (24) Surface seal design/construction (depths from \_\_\_ to \_\_\_);
- (25) Type of protection well cap;
- (26) Ground surface elevation ( $\pm 0.1$  ft.);
- (27) Well cap elevation ( $\pm 0.01$  ft.);
- (28) Top of casing elevation ( $\pm 0.01$  ft.); and
- (29) Detailed drawing of well (include dimensions).

**112.23(8) Well development.** Prior to use of the monitoring well for water quality monitoring purposes, well development is required to ensure the collection of representative groundwater samples. Procedures used in well development involve using a surge block, bailing or surging by pumping of compressed inert gas to produce a movement of water at alternately high and low velocities into and out of the well screen and gravel pack in order to loosen and remove fine materials. Development of low hydraulic conductivity wells may require the circulation of water down the well casing, out through the screen and gravel pack, and up the open borehole prior to the placement of grout or seal in the annulus. Any additional water used must be of a quality so as not to interfere with future groundwater quality determinations. Following surging, the well is pumped until the water does not contain significant quantities of suspended solids.

**567—112.24(455B) Sealing abandoned wells and boreholes.** Boreholes, piezometers and observation wells not used for groundwater monitoring must be sealed. The location of the abandoned well or borehole shall be documented in writing with reference to the landfill's coordinate system and method of sealing. The document must be retained at the landfill with a copy sent to the department.

**112.24(1) Sealing boreholes.** The borehole shall be filled by extending a tremie tube to the bottom of the hole. Bentonite or expanding cement grout shall be applied through the tube to the bottom of the hole and the tremie tube shall be raised as the hole is filled from the bottom upward. The end of the tremie tube shall be submerged in the grout while filling. The borehole shall be filled from the base of the boring all the way to the ground surface.

**112.24(2) Sealing abandoned monitoring wells.**

*a.* Well is known to be constructed properly with impermeable grout that was installed from the bottom up using a tremie tube. Any existing protective metal casing shall be removed by vertically pulling it off the well. With a tremie tube, the inner well casing shall be filled with an impermeable grout slurry from the bottom to ground surface. After 24 hours, the grout shall be retopped if it has settled below the existing ground surface.

*b.* Well construction is improper or undocumented. An attempt to remove the well casing should be made. If the well casing cannot be removed, the well casing shall either be drilled around with a hollow stem auger of large inside diameter or shall be drilled out with a standard casing bit or solid stem auger with a boring diameter greater than the initial diameter of the hole. Drilling shall be to the maximum depth of the previously drilled boring. The drilling debris shall be cleaned from the interior

of the auger or borehole. The borehole shall be sealed with an impermeable grout using a tremie tube. If the soil conditions permit the sealing to be conducted in a continuous operation, the tremie tube shall be submerged in the grout at all times. After 24 hours, the grout shall be retopped if it has settled below the ground surface.

c. Monitoring wells in future fill areas. The well shall be removed and sealed as described in the procedures for sealing boreholes in 112.24(1).

**567—112.25(455B) Variance from design, construction, and operation standards.** Pursuant to the authority of Iowa Code section 455B.303, a variance from the specific requirements of rules 112.14(455B) to 112.25(455B) may be issued, modified, or denied by the director. The request shall also include any supporting information to be considered by the director in the formulation of a decision.

**567—112.26(455B) General requirements for all sanitary landfills.**

**112.26(1) Plan requirements.** The plans for all sanitary landfills shall include the following:

a. The map and aerial photograph required in subrule 112.13(3) of sufficient scale to show all homes, buildings, lakes, ponds, watercourses, wetlands, dry runs, rock outcroppings, roads and other applicable details including topography and drainage patterns. All wells shall be identified on the map or aerial photograph and a bench mark shall be indicated.

b. A plot drawing in appropriate scale of the site and the immediately adjacent area showing dimensions, topography with appropriate contour intervals, drainage patterns, known existing drainage tiles, locations where any geologic samples were taken, all water wells with their uses, and present and planned pertinent features including but not limited to roads, fencing, and cover stockpiles.

c. Detailed engineering drawing of the site showing all initial and permanent roads, buildings and equipment to be installed; unloading and holding areas; fences and gates; landscaping and screening devices; personnel and maintenance facilities; and sewer and water lines.

d. A liner system that meets the following requirements, depending upon the type of waste material disposed of:

(1) Municipal solid waste landfills (MSWLFs) shall have a composite liner system consisting of two components. The upper component must consist of a minimum 30-mil flexible membrane liner (FML), and the lower component must consist of at least a two-foot layer of compacted soil as specified in subparagraph 112.26(1)“d”(2). FML components consisting of high-density polyethylene (HDPE) shall be at least 60-mil thick. The FML must be installed in direct and uniform contact with the compacted soil component. The requirements for MSWLF facilities under this subparagraph were effective November 13, 1996, and apply to liner and cover systems that had not been installed by that date.

(2) Nonmunicipal solid waste landfills may utilize a liner system meeting 112.26(1)“d”(1) or shall have a soil liner consisting of at least four feet of recompacted soil. The description, source and volume of the material to be used for the landfill liner, including the method of installation, must be provided. The coefficient of permeability must be  $1 \times 10^{-7}$  cm/sec (0.00028 ft/day) or less as determined by appropriate laboratory analysis. The percent of standard or modified proctor density at moisture contents consistent with expected field conditions and corresponding to a measured coefficient of permeability equal to or less than  $1 \times 10^{-7}$  cm/sec shall be determined in the laboratory. The soil shall be placed in lifts not to exceed 8 inches in thickness. A minimum of one field density test shall be performed per lift per acre to verify that the density determined by the laboratory analysis as correlated to permeability has been achieved. Results of field density tests shall be submitted to the department prior to the placement of solid waste.

e. Alternative liner systems.

(1) The department may approve an alternative to the liner system specified in subparagraph 112.26(1)“d”(1) provided that the alternative liner system design has included certification by a professional engineer registered in Iowa stating that the proposed alternative liner system will ensure that the contaminant concentration values listed in federal regulations under 40 CFR 258, Subpart D, Table 1, will not be exceeded in the uppermost aquifer at the designated monitoring points of

compliance as specified by the department. This point of compliance shall be no more than 150 meters from the waste management boundary.

This point of compliance is to be utilized for the purpose of certifying the alternative design only. All operational issues related to monitoring systems, compliance determinations, groundwater assessments, and remedial measures are governed by the appropriate relevant rules in this chapter and 567—Chapter 111. The certification shall be on a form furnished by the department which shall include space for identification of the sources of data utilized; formulas, models, tests or other methods utilized to determine contaminant concentrations at the points of compliance; and all references or guidance documents relied upon for the techniques or methods applied. A copy of all data utilized, formulas, models, tests or other methods utilized to determine contaminant concentrations at the point of compliance shall be placed in the facility's official files prior to operation of the landfill.

(2) An alternative liner system to that required in subparagraph 112.26(1) "d"(2) may be approved by the director if the design of the liner system is equivalent to the soil liner required in subparagraph 112.26(1) "d"(2) in performance, longevity and protection of the groundwater; or, based on the specific type of waste to be disposed of, the design of the liner system offers equivalent protection of the groundwater. Undisturbed soil will not be allowed for use as liner material.

*f.* Diversion and drainage structures designed to prevent ponding, infiltration, inundation, erosion, slope failure and washout from surface runoff due to a 25-year, 24-hour rainfall event, as shown in the department of agriculture and land stewardship publication "Climatology of Iowa Series #2-1980."

*g.* A leachate collection, storage and treatment and disposal system designed to protect the soils, surface water, and groundwater from leachate contamination. This system shall be designed to operate during the active life of the site and during the postclosure period required by Iowa Code section 455B.304.

(1) The design and construction of the system must be in accordance with subrule 112.26(3) and be coordinated with the planned phase development of the site and the timing of leachate generation.

(2) The potential for leachate generation shall be evaluated in determining the design for the facility.

(3) The plan must include proposed quality assurance and quality control testing to be performed during installation and operation of the system. The plan shall include procedures that will be followed during installation of the leachate collection system and during normal landfill operations to ensure the system's integrity and design standards.

*h.* A drawing of the scheme of development including any excavation, trenching, and fill shown progressively with time. The methods to be used to ensure compliance with the scheme and to provide vertical and horizontal controls shall be described.

*i.* Cross-sectional drawings showing progressively with time the original and proposed elevation of excavating, trenching, and fill.

*j.* Evidence that the proposed plan has been reviewed by the local soil conservation district commissioner and that the technical assistance of the soil conservation district will be utilized to facilitate compliance with wind and water soil loss limit regulations provided for in Iowa Code sections 467A.42 to 467A.51.

*k.* An ultimate land use proposal, including intermediate stages, with time schedules indicating the total and complete land use. Final elevations, grades, permanent drainage structures, monitoring or treatment facilities and permanent improvements of the completed landfill shall be included. Any supporting drawings to the ultimate land use proposal shall be in appropriate scale.

*l.* Information describing:

(1) Source, volume, and characteristics of cover material;

(2) Area of site in acres;

(3) Areas to be used for salvaging and the burning of diseased trees.

*m.* A report consisting of information verifying that the portion of the site to be filled is:

(1) So situated as to obviate any predictable lateral movement of significant quantities of leachate from the site to standing or flowing surface water or to shallow aquifers that are in actual use or are deemed to be of potential use as a water resource.

(2) So situated that the base of the proposed site is at least 5 feet above the high water table unless a greater separation is required to ensure that there will be no significant adverse effect on groundwater or surface waters or a lesser separation is unlikely to have a significant adverse effect on groundwater and surface waters.

(3) Outside a flood plain or shoreland, unless proper engineering and sealing of the site will render it acceptable and prior approval of the department under Title V of these rules and, when necessary, the U.S. Corps of Engineers is obtained.

(4) So situated to ensure no adverse effect on any well within 1,000 feet of the site existing at the time of application for the original permit which is being used or could be used without major renovation for human or livestock consumption or at least 1,000 feet from any such well unless hydrologic conditions are such that a greater distance is required to ensure there is no adverse effect on the well.

(5) So situated to ensure no adverse effect on the source of any community water system in existence at the time of application for the original permit within one mile of the site or at least one mile from the source of any community water system in existence at the time of application for the original permit unless hydrologic conditions are such that a greater distance is required to ensure no adverse effect on the water system.

(6) At least 20 feet from the adjacent property line unless there is a written agreement with the owner of the abutting property. The report shall verify that the portion to be filled is at least 50 feet from the adjacent property line. The written agreement shall be filed with the county recorder and shall become a permanent record of the property.

(7) Beyond 500 feet from any existing habitable residence unless there is written agreement with the owner of the residence and the site is screened by natural objects, plantings, fences or by other appropriate means. The residence must be in existence on the date of application for the original permit from the department. The written agreement shall be filed with the county recorder and recorded for abstract of title purposes, and a copy submitted to the department.

*n.* Should conditions in violation of 112.26(1) “*m*”(1), (2), (3), (4), or (5) exist, the original plan shall detail how the site is to be engineered to provide equivalent protection to the water resources. The applicant shall have the burden of showing that equivalent protection will be provided.

*o.* If sewage sludge is to be disposed of at the site, the characteristics of the sludge and the method of disposal shall be described. If sludge is to be utilized for land application, such utilization shall be in conformance with 567—Chapter 67.

*p.* The required soil and hydrogeologic design information specified in rules 112.14(455B) through 112.25(455B).

*q.* Such additional data and information as may be deemed necessary by the director to evaluate a proposed sanitary landfill.

*r.* When a new landfill or lateral expansion is located within 10,000 feet of any airport runway end used by turbojet aircraft or within 5,000 feet of any airport runway end used by only piston-type aircraft, the plan must contain a notice that the landfill’s official files will include the following demonstration: that the site is designed and will be operated so that it does not pose a bird hazard to aircraft. For any new site or a lateral expansion within a five-mile radius of any airport runway end used for turbojet or piston-type aircraft, the plan must show that the Federal Aviation Administration has been notified. For existing landfills located within 10,000 feet of any airport runway end used by turbojet aircraft or within 5,000 feet of any runway end used by only piston-type aircraft, the owner or operator must prepare the demonstration required by this paragraph and notify the director that it has been placed in the facility’s official files.

*s.* When a new landfill or lateral expansion is located within 200 feet of a fault that has had displacement in Holocene time, the plan must contain a notice that the facility’s official files will include the following demonstration: that an alternative setback distance of less than 200 feet will prevent damage to the structural integrity of the site and will be protective of human health and the environment.

*t.* When a new landfill or a lateral expansion is located in seismic impact zones, the plan must contain a notice that the facility’s official files will include the following demonstration: that all

containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in the lithified earth material for the site.

*u.* When a new facility or lateral expansion is located in an unstable area, the plan must contain a notice that the facility's official files will include the following demonstration: that engineering measures have been incorporated into the site design to ensure that the integrity of the structural components of the site will not be disrupted. The demonstration must consider the on-site or local soil conditions that may result in significant differential settling, on-site or local geologic or geomorphologic features, and on-site or local human-made features or events (both surface and subsurface). For existing facilities located in an unstable area, the owner or operator must prepare the above demonstration required in this paragraph and notify the director that it has been placed in the facility's official files.

**112.26(2)** *General operating requirements for all sanitary landfills.* All sanitary landfills shall be operated in conformance with this subrule. The plan submitted shall detail how the sanitary landfill will comply with these requirements.

*a.* Solid waste shall be unloaded at the operating area only when an operator is on duty at that area. Solid waste may be deposited in storage containers inside the site under the supervision of an attendant or operator.

*b.* Access to the site shall be restricted and a gate shall be provided at the entrance to the site and shall be kept locked when an attendant or operator is not on duty.

*c.* A copy of the permit, engineering plans and reports shall be kept at the site at all times unless the applicant demonstrates to the department that, on the basis of the characteristics of the waste to be handled at the site and the times of operation of the site, such is unnecessary.

*d.* Sites not open to the public shall have a permanent sign posted at the site entrance specifying:

- (1) Name of operation.
- (2) The site permit number.
- (3) That the site is not open to the public.
- (4) The name and telephone number of the responsible official.

*e.* Solid waste shall not be deposited in such a manner that material or leaching therefrom may cause pollution of groundwater or surface waters.

*f.* Provision shall be made for an all-weather fill area which is accessible for solid waste disposal during all weather conditions under which solid waste is received and disposed of at the site. Such all-weather areas shall be operated at all times in accordance with Iowa Code chapter 455B and these rules.

*g.* Provisions shall be made to have cover material available for winter and wet weather operations.

*h.* Each site shall be graded and provided with drainage facilities to meet the requirements of 112.26(1) "f" to minimize flow of surface water onto and into the portion of the site being filled, and to prevent soil erosion and ponding of water.

*i.* The finished surface of the site shall be repaired as required, covered with soil, and seeded with native grasses or other suitable vegetation immediately upon completion or promptly in the spring on areas terminated during winter conditions. If necessary, seeded slopes shall be covered with straw or similar material to prevent erosion.

*j.* Each sanitary landfill shall be staked as necessary and inspected annually, or as otherwise specified in the permit, by a professional engineer registered in Iowa. A brief report by the engineer indicating areas of conformance or nonconformance with the approved plans and specifications shall be submitted to the department by the permit holder within 30 days of the inspections. In specifying alternate inspection frequencies, the department shall consider the types and quantities of waste disposed of, the rate of development of the site, the degree of control over site development inherent in the design and topography of the site and the quality of prior operation.

*k.* If any pockets, seams or layers of sand or other highly permeable material are encountered at the sanitary landfill, the permit holder shall promptly notify the department and shall ensure that a professional engineer registered in Iowa has certified that all sands encountered were totally excavated or sealed off properly or otherwise handled as explicitly provided for in the permit before solid waste is disposed of in that area of the site.

*l.* The total volume of leachate collected for each month shall be recorded, and the elevation of leachate in the landfill shall be provided to the department in accordance with the schedule specified in the permit.

**112.26(3) Hydrologic monitoring system.** The owner or operator of a solid waste disposal facility shall operate and maintain a hydrologic monitoring system which includes a sufficient number of groundwater monitoring wells and surface water monitoring points to determine the impact, if any, that the sanitary disposal project is having on the adjacent water. The hydrologic monitoring systems shall enable early detection of the escape of pollutants from a sanitary landfill.

The hydrologic monitoring system shall be planned, designed and constructed in accordance with the provisions of rules 112.14(455B) through 112.25(455B), and implemented in accordance with the following schedule:

*a.* A hydrologic monitoring system plan shall be submitted to the department for review and approval with any application for a new permit. Installation of the approved system shall be completed prior to the deposition of solid waste into the landfill.

*b.* A hydrologic monitoring system plan shall be submitted with applications for permit renewal, not later than the date of renewal, with completion of installation and operation within one year of approval of the plan. Installation of the plan shall be completed within one year of the date of department approval.

*c.* Upon notice by the department, a hydrologic monitoring system plan may be required to be submitted within six months of such notification, with completion of installation and operation of the approved plan within one year of the date of department approval.

**112.26(4) Hydrologic monitoring system operating requirements.**

*a. Operational sampling requirements.* All sampling shall be conducted in accordance with an approved sampling protocol, components of which are described in rule 112.20(455B).

*b. Groundwater levels.* The elevation of water in each monitoring well shall be measured monthly and recorded to the nearest 0.01 foot. Level measurements must be made before a well is evacuated for sample collection.

*c. Surface water levels.* The water level or flow rate of each surface water body sampled shall be measured and recorded at the time of sample collection.

*d. First-year water sampling.* During the first year of operation of the hydrologic monitoring system, a sample shall be collected quarterly from each groundwater monitoring well and surface water monitoring point. The purpose of this sample is to determine baseline water quality information and enable initial estimation of water quality variability. Each sample shall be analyzed for the following parameters in addition to the parameters listed in paragraph “*e*” of this subrule and any additional parameter deemed necessary by the department:

- (1) Arsenic, dissolved.
- (2) Barium, dissolved.
- (3) Cadmium, dissolved.
- (4) Chromium, total dissolved.
- (5) Lead, dissolved.
- (6) Mercury, dissolved.
- (7) Magnesium, dissolved.
- (8) Zinc, dissolved.
- (9) Copper, dissolved.
- (10) Benzene.
- (11) Carbon tetrachloride.
- (12) 1,2-Dichloroethane.
- (13) Trichloroethylene.
- (14) 1,1,1-Trichloroethane.
- (15) 1,1-Dichloroethylene.
- (16) Paradichlorobenzene.

*e. Routine semiannual water sampling.* After the first year, each monitoring point must be sampled semiannually as specified in the facility's operation permit and analyzed for the following parameters:

- (1) Chloride.
- (2) Specific conductance (field measurement).
- (3) pH (field measurement).
- (4) Ammonia nitrogen.
- (5) Iron, dissolved.
- (6) Chemical oxygen demand.
- (7) Temperature (field measurement).
- (8) Any additional parameters deemed necessary by the department.

*f. Routine annual water sampling.* One sample per year from each monitoring point collected in a quarter specified in the facility's operation permit must be analyzed for the following parameters:

- (1) Total organic halogen.
- (2) Phenols.
- (3) Any additional parameters deemed necessary by the department.

**112.26(5) Laboratory procedures.** The owner or operator of the solid waste facility must have the groundwater and surface water samples analyzed only by laboratories that are certified by the state of Iowa. Until the department adopts rules regarding certification of laboratories, analyses shall be conducted at a laboratory that certifies to the department that the appropriate analytical procedure is utilized.

All analyses of parameters not covered in the Safe Drinking Water Act (SDWA) must be performed according to methods specified in SW-846 or approved by the United States Environmental Protection Agency. Any analytical method used on non-SDWA parameters deviating from those specified in SW-846 or approved by EPA must be approved by the department.

All analyses must be recorded on forms which, in addition to the analytical results, show the precision of the data set, bias, and limit of detection.

**112.26(6) Analysis of sampling data.** For each parameter analyzed during the first year of operation of the hydrologic monitoring system, as listed in paragraph 112.26(4) "d" above, the mean and standard deviation for each upgradient monitoring well shall be determined using the first year of data. For routine semiannual monitoring parameters, as listed in paragraph 112.26(4) "e" above, mean and standard deviation shall be recalculated annually using all available analytical data. If the analytical results for a downgradient monitoring point do not fall within the control limits of two standard deviations above the mean parameter(s) level in a corresponding upgradient monitoring point, the owner or operator shall submit this information to the department within 30 days of receipt of the analytical results. If the analytical results from an upgradient monitoring point do not fall within two standard deviations of the mean parameter(s) level for that monitoring point, the department shall also be notified within 30 days.

**112.26(7) Additional sampling.** The department will determine if additional sampling is warranted, after receipt of information indicating a possible release as required in subrule 112.26(6) above. The department may require any additional samples to be split and analyzed to determine if the values obtained outside the control limits were the result of laboratory or sampling error. Any additional analytical results shall be submitted to the department by the owner or operator within seven days of receipt.

The department will review the information and determine if additional monitoring or preparation of a groundwater quality assessment plan, in accordance with subrule 112.26(9), is necessary.

**112.26(8) Record keeping and recording.**

*a.* The persons conducting the sampling must record the procedures, measurements, and observations at the time of sampling. The field records must be sufficient to document whether the procedures and requirements specified in the sampling protocol have been followed. The records must also contain the names of the persons conducting the sampling, the time and date each monitoring point

was sampled, and the required field measurement or test result. The owner or operator must submit copies of these field records to the department if requested.

b. The owner or operator shall keep records of analyses and the associated groundwater surface elevations for the active life and postclosure period of the facility. These records shall be kept at the site or in the administrative files of the owner or operator, and shall be available for review by the department upon request in the county in which the landfill is located.

c. The owner or operator shall provide the department with copies of the quarterly monitoring analytical results by the dates specified in the facility's operation permit.

d. An annual report summarizing the effect of the facility on groundwater and surface water quality shall be submitted to the department by November 30 each year. The summary is to be prepared by an engineer registered in the state of Iowa and incorporated in the November semiannual engineer inspection report. The contents of this summary are to include the following items:

- (1) Amounts and kinds of wastes accepted under Special Waste Authorizations.
- (2) A narrative describing the effects of the facility on surrounding surface water and groundwater quality and any changes made or maintenance needed in the monitoring network.
- (3) Graphs showing concentrations versus time for all monitoring parameters for each well for as long as records exist for that parameter. Control limits ( — two standard deviations from the initial background value) must be shown in each graph.
- (4) Results of activities and tests required by the well maintenance and performance reevaluation plan described in rule 112.21(455B) shall be submitted to the department.

**112.26(9) Groundwater quality assessment plan.**

a. If leachate migration occurs, the owner or operator, as required by the department, shall develop and submit for approval a specific plan to conduct a groundwater quality assessment study at the facility to determine the rate of migration and the extent and constituent composition of the leachate release. At a minimum, the assessment monitoring plan must contain the following elements:

- (1) Discussion of the hydrogeologic conditions at the site with an identification of potential contaminant pathways.
- (2) Description of the present detection monitoring system.
- (3) A description of the approach the owner or operator will take to substantiate any contention that the contamination may have been falsely indicated.
- (4) Description of the investigatory approach used to characterize the rate and extent of leachate migration.
- (5) Discussion of the number, location and depth of wells that will be initially installed as well as a strategy for installing more wells in subsequent investigatory phases.
- (6) Information on well design and construction.
- (7) Description of the sampling and analytical program used to obtain and analyze groundwater monitoring data.
- (8) Description of data collection and analysis procedures.
- (9) Schedule for the implementation of each phase of the assessment study.

b. After the plan has been approved by the department, the owner or operator shall implement the plan according to the schedule in the plan.

c. Within 90 days after the activities prescribed in the groundwater assessment plan have been completed, the owner or operator shall submit a written groundwater quality assessment report to the department.

d. If the department determines that no waste or waste constituents from the facility have entered the groundwater, the owner or operator shall reinstate the routine monitoring program.

If the department determines that waste or waste constituents have been released from the facility and have entered the groundwater, the owner or operator shall continue to make the determinations described by the assessment plan and develop a remedial action/mitigation plan to alleviate or reduce contamination to the fullest extent possible.

**112.26(10) Postclosure monitoring requirements.**

a. At least six months prior to closing the site, the owner or operator of a sanitary landfill shall submit a plan to the department for approval detailing a 30-year postclosure monitoring program.

b. The department will review the facility's postclosure monitoring records at five-year intervals to determine if changes in the monitoring frequencies or parameters are required.

c. The commission may adopt rules on a site-specific basis identifying additional monitoring requirements for sanitary landfills for which the postclosure monitoring period is to be extended.

**112.26(11) Leachate control systems for new landfills.** Every new landfill must have a leachate collection, storage, and treatment and discharge system in place prior to accepting waste. This system shall be operated in conformance with the approved design during the active life of the site and during the postclosure period.

a. *Leachate collection system.*

(1) The leachate collection system shall be designed to allow not more than 1 foot of head above the top of the landfill liner. The collection system must include a method for measuring the leachate head in the landfill at the lowest area(s) of the collection system.

(2) The landfill liner must be graded toward the leachate collection pipe at a slope greater than 2 percent, but not to exceed 10 percent. The side slopes of the landfill liner must be less than 25 percent.

(3) A drainage layer must be placed immediately above the landfill liner. This drainage layer shall consist of a minimum of 1 foot of soil with a coefficient of permeability of  $1 \times 10^{-3}$  cm/sec (2.8 ft/day) or greater.

(4) Leachate collection pipe shall be placed in a trench excavated a minimum of 18 inches into the liner. The liner system beneath the trench shall meet the applicable requirements specified under 112.26(1) "d."

(5) Leachate collection pipe shall be surrounded by a gravel protection and drainage layer, and by either a graded filter layer or by a geotextile filter fabric.

(6) The collection pipe must be covered with a filter material to encourage flow and to prevent infiltration of fine-grained materials into the pipe. The collection pipe must be perforated or slotted, of a sufficient diameter to handle the expected flow, but not less than 4 inches in inside diameter; capable of being cleaned throughout the active life of the site and during the postclosure period; chemically resistant to the wastes and the expected leachate; and of sufficient strength to support maximum static and dynamic loads imposed by the overlying wastes, cover materials, and equipment used during the construction and operation of the site. Documentation shall be submitted which includes methods and specifications for cleaning of the pipes, chemical compatibility of the pipes, and calculations and specifications for pipe strength.

(7) The leachate collection system shall be equipped with valves to enable the flow of leachate from the facility to be shut off during periods of maintenance.

(8) The leachate collection system shall be cleaned out once every three years, or more frequently if leachate head or the volume of leachate collected indicates cleanout is necessary. A report of the methods and results of the cleanout shall be submitted at the time of permit renewal.

b. *Leachate storage system.* The leachate storage system must be:

(1) Capable of storing at least seven days' accumulation of leachate based on mathematical simulated volume using average precipitation; and

(2) Constructed of materials which are compatible with the expected leachate; and

(3) Accessible at all times of the year and under all weather conditions.

c. *Leachate treatment and disposal system.*

(1) Leachate shall be treated by such physical, chemical or biological processes as necessary to meet the pretreatment limits, if any, imposed by a treatment agreement between the landfill and a publicly owned treatment works, or by the effluent discharge limitation established by an NPDES permit issued to the landfill.

(2) Leachate recirculation systems shall be designed to minimize detrimental effects to vegetative cover, to minimize erosion and damage to the soil cover, and to promote rapid stabilization of the waste. Such systems shall not be allowed for sites which do not satisfy all of the requirements of 112.26(11).

(3) All leachate treatment systems, except as described in (2) above, shall conform to wastewater treatment design standards as established by the department.

*d. Inspection prior to start-up.* The department shall be notified when the initial construction of the leachate collection, storage, and treatment and discharge system has been completed in order that an inspection may be made to determine that the leachate control system is constructed as designed. Prior to this inspection, construction certification reports from the project engineer must be submitted discussing quality assurance and quality control testing done to ensure that all materials and equipment for the leachate control system have been placed in accordance with the approved engineering plans, reports and specifications. The results of all testing must be included, along with documentation of any failed tests, a description of the procedures used to correct the failures, and results of any retesting performed. This inspection may be incorporated with the inspection required by rule 112.12(455B).

**112.26(12) Leachate control systems for existing landfills.**

*a.* All existing landfills must submit a leachate control plan, as described in paragraph “*b*” below, when any of the following occur:

- (1) At the time of permit renewal;
- (2) When requesting a change in the existing permit for expansion or modification of the waste fill area;
- (3) Within 180 days of notification by the department of the detection of any leachate seep or contamination of the groundwater or surface waters from leachate; or
- (4) At least 180 days prior to landfill closure.

*b.* The design of the leachate control system must include leachate collection, storage, and treatment and disposal.

(1) New fill areas of a landfill that have not previously received waste must address the design standards of subrules 112.26(1) and 112.26(11).

(2) Existing fill areas must address the design standards of subrule 112.26(11), except paragraph “*a*,” subparagraphs (1) to (4). The leachate collection system must be designed to achieve the lowest possible leachate head above the landfill liner and must include a method of measuring the leachate head.

*c.* The leachate control plan must be implemented within one year of department approval of the leachate control plan.

**112.26(13) Closure requirements.** The owner or operator of the landfill must close the site in a manner that minimizes the potential for postclosure release of pollutants to the air, groundwater or surface waters.

*a.* A minimum of two permanent surveying monuments must be installed by a registered land surveyor from which the location and elevation of wastes, containment structures, and monitoring facilities can be determined throughout the postclosure period.

*b.* The final cover of a nonmunicipal solid waste landfill shall consist of:

(1) Not less than 2 feet of compacted soil. The permeability must be  $1 \times 10^{-7}$  cm/sec or less as determined by appropriate laboratory analysis. The percent of standard or modified proctor density at moisture content consistent with expected field conditions and corresponding to a measured coefficient of permeability equal to or less than  $1 \times 10^{-7}$  cm/sec shall be determined in the laboratory. The soil shall be placed in lifts not to exceed 8 inches in thickness. A minimum of one field density test shall be performed per lift per acre to verify that the density determined by the laboratory analysis as correlated to permeability has been achieved. Results of field density tests shall be submitted to the department. The compacted soil shall be keyed into the bottom liner at the waste cell boundary.

(2) Not less than 2 feet of uncompacted soil, containing sufficient organic matter to support vegetation. The thickness of this soil layer must be at least the root depth of the planned vegetative cover to prevent root penetration into the underlying soil layers. This layer shall be placed as soon as possible to prevent desiccation, cracking and freezing of the compacted soil layer described in 112.26(13) “*b*”(1).

(3) A layer of compacted soil, incinerator ash, or similar material permitted by the department may be used to prepare the site for placement of the compacted soil layer described in 112.26(13) “*b*”(1). The use of such material will not serve as a replacement for the compacted soil layer described in 112.26(13) “*b*”(1).

(4) Alternate methods and materials may be permitted if shown to provide equal or superior performance.

c. The final cover for a municipal solid waste landfill shall consist of:

(1) An erosion layer underlaid by an infiltration layer. The infiltration layer must be comprised of a minimum of 18 inches of earthen material that has a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than  $1 \times 10^{-5}$  cm/sec, whichever is less. The erosion layer must consist of a minimum of 6 inches of earthen material that is capable of sustaining native plant growth.

(2) The department may approve an alternate final cover design that includes an infiltration layer that achieves an equivalent reduction in infiltration as the infiltration layer specified above in subparagraph (1) and an erosion layer that provides equivalent protection from wind and water erosion as the erosion layer specified above in subparagraph (1).

d. Those portions of existing landfills demonstrating placement of final cover in conformance with previously approved plans and specifications or regulations in effect at the time of such approval shall not be required to apply additional cover solely to achieve compliance with 112.26(13) "b" and 112.26(13) "c." Those areas of existing landfills which have not been completed in conformance with the exemptions provided herein prior to January 15, 2003, shall complete all such areas in conformance with an approved closure plan pursuant to subrule 112.13(10) which shall include compliance with the provisions of 112.26(13) "b" and 112.26(13) "c." This paragraph shall not preclude a requirement to provide additional cover to such exempted areas as a result of the conclusions of a groundwater assessment or remedial action plan.

e. The final cover shall be designed and graded to meet the drainage requirements of 112.26(1) "f." The final cover must have a minimum slope of 5 percent, and shall not exceed a slope of 25 percent. Those portions of existing landfills demonstrating placement of final cover in conformance with previously approved plans and specifications shall not be required to reconstruct the cover to meet either the minimum or maximum slope established by this subrule. Those areas which have not been completed by placement of final cover pursuant to this exemption on January 15, 2003, shall be completed in conformance with an approved closure plan pursuant to subrule 112.13(10) and shall meet the minimum and maximum slope requirements stated herein. This subrule shall not preclude a requirement to modify the slope of any portion of the landfill as a result of the conclusion of a groundwater assessment or remedial action plan.

f. The final cover shall be seeded with native grasses or other suitable vegetation as soon as practical upon completion to prevent soil erosion. If seeding must be delayed due to summer or winter conditions, silt fences or other structures shall be used to minimize erosion of the final cover until the next season suitable for planting. The placement of cover in conformance with 112.26(13) "b" and 112.26(13) "c" shall not be delayed due to season and shall be placed as soon as the solid waste has reached its maximum design elevation within the cell. Vegetation type shall be based on density and root depth, nutrient availability, soil thickness, and soil type. Alternatives to vegetative cover may be considered to control erosion and promote runoff.

g. An approved groundwater monitoring system as required by the closure permit and the rules must be in place and operating.

h. An approved leachate collection and treatment system as required by the closure permit and the rules must be in place and operating.

i. An approved landfill gas monitoring and collection or ventilation system as required by the closure permit and the rules must be in place and operating unless determined not to be necessary by the director.

j. An approved financial assurance instrument, adequate to cover costs of all postclosure activities as required by the closure plan and the closure permit, must be provided upon promulgation of the appropriate rules.

k. All requirements of the closure plan, the closure permit, and the rules must be satisfied.

**112.26(14)** *Postclosure requirements for 30 years following closure of the site.* The owner or operator of the site must comply with all postclosure requirements.

*a.* The diversion and drainage system as required in 112.26(1) “*f*” must be maintained to approved specifications to prevent run-on and runoff from eroding or otherwise damaging the final cover.

*b.* The integrity and effectiveness of the final cover must be maintained by making repairs as necessary to correct the effects of settling, subsidence, erosion, or other events. If damage to the compacted soil layer described in 112.26(13) “*b*”(1) occurs, repairs shall be made to correct the damage and return it to its original specifications.

*c.* The vegetative cover shall be reseeded as necessary to maintain good vegetative growth. Any invading vegetation whose root system could damage the compacted soil layer shall be removed or destroyed immediately.

*d.* The groundwater monitoring system shall be operated and maintained and shall comply with all applicable rules and closure permit requirements.

*e.* The leachate collection, removal and treatment systems shall be operated and maintained and shall comply with all applicable rules and closure permit requirements.

*f.* The landfill gas monitoring and collection systems shall be operated and maintained and shall comply with all applicable rules and closure permit requirements.

*g.* Semiannual reports shall be submitted to the department. These reports shall contain information concerning the general conditions at the site, groundwater monitoring results, amount of leachate collected and treated, information concerning the landfill gas monitoring and collection system, and other information as may be required by the closure permit. In addition, locations and elevations of all permanent monuments, required in 112.26(13) “*a*,” shall be determined at least once every three years or more frequently in the event of obvious disturbance of the monument. The reports are due by April 30 and October 31 for the preceding six-month period.

*h.* The permanent surveying monuments required in 112.26(13) “*a*” shall be maintained.

**112.26(15) Control of explosive gases.**

*a.* Owners or operators of all sanitary landfills must ensure that:

(1) The concentration of methane gas generated by the facility does not exceed 25 percent of the lower explosive limit for methane gas in facility structures (excluding gas control or recovery system components); and

(2) The concentration of methane gas does not exceed the lower explosive limit for methane gas at the facility property boundary.

*b.* Owners or operators of all sanitary landfills must monitor quarterly for compliance with paragraph “*a*” of this subrule. An annual report shall be submitted by November 30 summarizing the methane gas monitoring results and any action taken resulting from gas levels exceeding the limits during the previous year.

*c.* If methane gas levels exceeding the limits specified in paragraph “*a*” of this subrule are detected, the owner or operator must:

(1) Immediately take all necessary steps to ensure protection of human health and notify the director;

(2) Within seven days after detection, submit to the director a report stating the methane gas levels detected and a description of the steps taken to protect human health;

(3) Within 60 days of detection, implement a plan for remediation of the methane gas releases and send a copy of the remediation plan to the director. The plan shall describe the nature and extent of the problem and the proposed remedy.

**567—112.27(455B) Operating requirements for all sanitary disposal projects.** Every application for any permit issued by the department shall detail the means by which the applicant will comply with the following operating requirements. All sanitary disposal projects shall be operated in conformance with these requirements.

**112.27(1)** Open burning shall be prohibited except when permitted by 567—Chapter 23. Any burning to be conducted at the site shall be at a location that is separate and distinct from the operating area.

**112.27(2)** Litter shall be confined to the property on which the sanitary disposal project is located. At the conclusion of each day of operation, any litter strewn beyond the confines of the operating area shall be collected and stored in covered leakproof containers or properly disposed of.

**112.27(3)** Scavenging shall be prohibited. Any salvaging to be conducted must be described in the permit application, and all salvaged materials must be stored and removed from the sanitary disposal project site in conformance with the permit conditions.

**112.27(4)** Effective means shall be taken to control flies, other insects, rodents and other vermin.

**112.27(5)** Equipment designated in the plans and specifications or equivalent equipment shall be used to operate the site at all times.

**112.27(6)** The major internal roads shall be of all-weather construction and maintained in good condition. Dust shall be controlled on internal roads.

**112.27(7)** Sites open to the public shall have a permanent sign posted at the site entrance specifying:

a. Name of the operation.

b. The site permit number.

c. The hours and days the site is open to the public.

d. The categories of waste which will be accepted for disposal or, as an alternative, the identification of the categories of waste which are prohibited.

e. Telephone number of official responsible for the operation.

**112.27(8)** Free liquids or waste containing free liquids. No free liquids or waste containing free liquids shall be disposed of in a sanitary landfill.

**112.27(9)** General closure requirements.

a. The owner or operator shall notify the department in writing at least 180 days prior to closure of the facility or suspension of operations.

b. Notice of closure shall be posted at the facility at least 180 days prior to closure indicating the date of closure and alternative solid waste management facilities. Notice of closure shall also be published at least 180 days prior to closure in a newspaper of local circulation. This notice shall include the date of closure and alternative solid waste management facilities.

c. Implementation of the closure/postclosure plan shall be completed within 90 days of the closure of the facility. The owner and an engineer registered in Iowa shall certify that the closure/postclosure plan has been implemented in compliance with the rules, the closure/postclosure plan and the permit.

d. Upon completion of closure activities, the following documentation shall be submitted: as-built plans showing changes from the original design plans; test results indicating compliance with final cover as applicable, waste removal, equipment decontamination; a copy of the notation filed with the county recorder; and other forms of documentation as required.

**567—112.28(455B) Specific requirements for a sanitary landfill proposing to accept no solid waste other than municipal sewage sludge.**

**112.28(1) Plan requirements.** The plans for sanitary landfills proposing to accept only sewage sludge shall include information required by rules 112.2(455B) through 112.13(455B), 112.27(455B), 112.29(455B), and 112.30(455B) and subrule 112.26(1) and the following:

a. The source of the sludge, a description of the process(es) which produce the sludge and a description of the sources and characteristics of the treatment plant influent.

b. Detailed analysis of the sludge to be disposed of at the site including:

(1) Total residue;

(2) Volatile residue;

(3) pH;

(4) Total nitrogen;<sup>1</sup>

(5) Ammonia nitrogen (NH<sub>3</sub>-N);<sup>1</sup>

(6) Nitrate-nitrogen (NO<sub>3</sub>-N);<sup>1</sup>

(7) Total phosphorous;<sup>1</sup>

(8) Potassium;<sup>1</sup>

(9) The following metals<sup>1</sup>: arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), mercury (Hg), molybdenum (Mo), nickel (Ni), selenium (Se), and zinc (Zn); and

(10) Such other tests as are determined by the department to be necessary to establish the constituents and stability of the sludge.

The collection and preservation of samples shall be done by the highest grade operator at the plant producing the sludge, or the operator's designee. The collection and preservation of samples shall be done in a manner and frequency approved by the director and intended to ensure that the sampling results are representative of the sludge being disposed.

Analyses shall be performed at a laboratory approved by the state hygienic laboratory. All analyses shall be performed in accordance with the methods described in "Methods for Chemical Analysis of Water and Wastes," 1974 (U.S. EPA) or "Standard Methods for the Examination of Water and Waste Water," 14th Edition, 1976. Alternate methods may be substituted only if acceptable to the state hygienic laboratory and approved by the department.

c. The detailed description of the disposal process required in subrule 112.13(6) shall include:

(1) Method of operation;

(2) Daily and annual loading of the sludge and the significant components of the sludge as identified in the analyses of 112.28(1) "b"; and

(3) Times of use (including durations and frequencies).

d. Information indicating how the operating requirements of rule 112.29(455B) and subrules 112.26(2) and 112.28(2) shall be met.

e. Engineering plans and reports detailing how the site will be designed, constructed, and operated to protect groundwater and surface water resources.

f. Proof of the applicant's ownership of the site or legal entitlement to use the site for the disposal of solid waste for the term of the permit for which application is made.

g. Such other information as is required by the director to determine the adequacy of the applicant's plan.

**112.28(2) Operating requirements.** Sanitary landfills accepting only sewage sludge shall be operated in conformance with rules 112.2(455B) through 112.13(455B), 112.27(455B), 112.29(455B), and 112.30(455B), subrule 112.26(2), and this subrule. Compliance with the surface disposal provision of federal regulations at 40 CFR Part 503, Subpart C, as adopted on February 19, 1993, is also required. The plan submitted shall detail how the sanitary landfill will comply with these requirements.

a. Sludge at the site shall be covered after each day of operation with a layer of at least 1 foot of earth. In no event shall sludge be exposed for more than 24 hours.

b. At least 2 feet of intermediate cover of earth shall be applied to any area of the site which will not be utilized for further disposal of sludge for more than one week. The cover shall be graded to allow surface water runoff without creating erosion or pollution problems.

c. The final cover shall be consistent with the proposed land use, but in no event shall it be less than 2 feet.

d. Analyses of the sludge shall be performed and submitted to the department on a stipulated schedule and shall include such tests as required to confirm the constituents of the sludge.

<sup>1</sup> on a dry weight basis

**567—112.29(455B) Operator certification.** Sanitary landfill operators and solid waste incinerator operators shall be trained, tested, and certified by a department-approved certification program.

**112.29(1)** A sanitary landfill operator or a solid waste incinerator operator shall be on duty during all hours of operation of a sanitary landfill or solid waste incinerator, consistent with the respective certification.

**112.29(2)** To become a certified operator, an individual shall complete a basic operator training course that has been approved by the department or an alternative, equivalent training approved by the

department and shall pass a departmental examination as specified by this rule. An operator certified by another state may have reciprocity subject to approval by the department.

**112.29(3)** A sanitary landfill operator certification or solid waste incinerator operator certification is valid until June 30 of the following even-numbered year.

**112.29(4)** Basic operator training course.

*a.* The required basic operator training course for a certified sanitary landfill operator will have at least 25 contact hours and will address the following areas, at a minimum:

- (1) Description of types of wastes;
- (2) Interpreting and using engineering plans;
- (3) Construction surveying techniques;
- (4) Waste decomposition processes;
- (5) Geology and hydrology;
- (6) Landfill design;
- (7) Landfill operation;
- (8) Environmental monitoring;
- (9) Applicable laws and regulations;
- (10) Permitting processes;
- (11) Leachate control and treatment.

*b.* The required basic operator training course for a certified solid waste incinerator operator will have at least 12 contact hours and will address the following areas, at a minimum:

- (1) Description of types of wastes;
- (2) Incinerator design;
- (3) Interpreting and using engineering plans;
- (4) Incinerator operations;
- (5) Environmental monitoring;
- (6) Applicable laws and regulations;
- (7) Permitting processes;
- (8) Incinerator maintenance;
- (9) Ash and residue disposal.

**112.29(5)** Alternate basic operator training must be approved by the department. It shall be the applicant's responsibility to submit any documentation the department may require to evaluate the equivalency of alternate training.

**112.29(6)** Fees.

*a.* The examination fee for each examination shall be \$20.

*b.* The initial certification fee shall be \$8 for each one-half year of a two-year period from the date of issuance to June 30 of the next even-numbered year.

*c.* The certification renewal shall be \$24.

*d.* The penalty fee shall be \$12.

**112.29(7)** Examinations.

*a.* The operator certification examinations will be based on the basic operator training course curriculum.

*b.* All persons wishing to take the examination required to become a certified operator of a sanitary landfill or a solid waste incinerator shall complete the Operator Certification Examination Application, Form 542-1354. A listing of dates and locations of examinations is available from the department upon request. The application form requires the applicant to indicate the basic operator training course taken. Evidence of training course completion must be submitted with the application for certification. The completed application and the application fee shall be sent to the director and addressed to the central office in Des Moines. Application for examination must be received by the department at least 30 days prior to the date of examination.

*c.* A properly completed application for examination will be valid for one year from the date the application is approved by the department.

*d.* Upon failure of the first examination, the applicant may be reexamined at the next scheduled examination. Upon failure of the second examination, the applicant shall be required to wait a period of 180 days between each subsequent examination.

*e.* Upon each reexamination when a valid application is on file, the applicant shall submit to the department the examination fee at least ten days prior to the date of examination.

*f.* Failure to successfully complete the examination within one year from the date of approval of the application shall invalidate the application.

*g.* Completed examinations will be retained by the director for a period of one year after which they will be destroyed.

*h.* Oral examinations may be given at the discretion of the department.

**112.29(8) Certification.**

*a.* All operators who passed the operator certification examination by July 1, 1991, are exempt from taking the required operator training course. Beginning July 1, 1991, all operators will be required to take the basic operator training course and pass the examination in order to become certified.

*b.* Application for certification must be received by the department within 30 days of the date the applicant receives notification of successful completion of the examination. All applications for certification shall be made on a form provided by the department and shall be accompanied by the certification fee.

*c.* Applications for certification by examination which are received more than 30 days but less than 60 days after notification of successful completion of the examination shall be accompanied by the certification fee and the penalty fee. Applicants who do not apply for certification within 60 days of notice of successful completion of the examination will not be certified on the basis of that examination.

*d.* For applicants who have been certified under other state mandatory certification programs, the equivalency of which has been previously reviewed and accepted by the department, certification without examination will be recommended.

*e.* For applicants who have been certified under voluntary certification programs in other states, certification will be considered. The applicant must have successfully completed a basic operator training course and an examination generally equivalent to the Iowa examination. The director may require the applicant to successfully complete the Iowa examination.

*f.* Applicants who seek Iowa certification pursuant to 112.29(8)“*d*” or “*e*” shall submit an application for examination accompanied by a letter requesting certification pursuant to those paragraphs. Application for certification pursuant to those paragraphs shall be received by the director in accordance with 112.29(8)“*a*” and 112.29(8)“*b*.”

**112.29(9) Renewals.** All certificates shall expire every two years, on even-numbered years, and must be renewed every two years to maintain certification. Application and fee are due prior to expiration of certification.

*a.* Late application for renewal of a certificate may be made provided that such late application shall be received by the director or postmarked within 30 days of the expiration of the certificate. Such late application shall be on forms provided by the department and accompanied by the penalty fee and the certification renewal fee.

*b.* If a certificate holder fails to apply for renewal within 30 days following expiration of the certificate, the right to renew the certificate automatically terminates. Certification may be allowed at any time following such termination, provided that the applicant successfully completes an examination. The applicant must then apply for certification in accordance with subrule 112.29(8).

*c.* An operator may not continue to operate a sanitary landfill or solid waste incinerator after expiration of a certificate without renewal thereof.

*d.* Continuing education must be earned during the two-year certification period. All certified operators must earn ten contact hours per certificate during each two-year period. The two-year period will begin upon issuance of certification.

*e.* Only those operators fulfilling the continuing education requirements before the end of each two-year period will be allowed to renew their certificates. The certificates of operators not fulfilling the continuing education requirements shall be void upon expiration, unless an extension is granted.

*f.* All activities for which continuing education credit will be granted must be related to the subject matter of the particular certificate to which the credit is being applied.

*g.* The director may, in individual cases involving hardship or extenuating circumstances, grant an extension of time of up to three months within which the applicant may fulfill the minimum continuing education requirements. Hardship or extenuating circumstances include documented health-related confinement or other circumstances beyond the control of the certified operator which prevent attendance at the required activities. All requests for extensions must be made 60 days prior to expiration of certification.

*h.* The certified operator is responsible for notifying the department of the continuing education credit earned during the period. The continuing education credits earned during the period shall be shown on the application for renewal.

*i.* A certified operator shall be deemed to have complied with the continuing education requirements of this rule during periods that the operator serves honorably on active duty in the military service; or for periods that the operator is a resident of another state or district having a continuing education requirement for operators and meets all the requirements of that state or district for practice there; or for periods that the person is a government employee working as an operator and is assigned to duty outside of the United States; or for other periods of active practice and absence from the state as approved by the department.

**112.29(10) Discipline of certified operators.**

*a.* Disciplinary action may be taken on any of the following grounds:

(1) Failure to use reasonable care or judgment or to apply knowledge or ability in performing the duties of a certified operator. Duties of certified operators include compliance with rules and permit conditions applicable to landfill or incinerator operation.

(2) Failure to submit required records of operation or other reports required under applicable permits or rules of the department, including failure to submit complete records or reports.

(3) Knowingly making any false statement, representation, or certification on any application, record, report or document required to be maintained or submitted under any applicable permit or rule of the department.

*b.* Disciplinary sanctions allowable are:

(1) Revocation of a certificate.

(2) Probation under specified conditions relevant to the specific grounds for disciplinary action. Additional education or training or reexamination may be required as a condition of probation.

*c.* The procedure for discipline is as follows:

(1) The director shall initiate disciplinary action. The commission may direct that the director investigate any alleged factual situation that may be grounds for disciplinary action under 112.29(10) "a" and report the results of the investigation to the commission.

(2) A disciplinary action may be prosecuted by the director.

(3) Written notice shall be given to an operator against whom disciplinary action is being considered. The notice shall state the informal and formal procedures available for determining the matter. The operator shall be given 20 days to present any relevant facts and indicate the operator's position in the matter and to indicate whether informal resolution of the matter may be reached.

(4) An operator who receives notice shall communicate orally, in writing, or in person with the director, and efforts shall be made to clarify the respective positions of the operator and director.

(5) The applicant's failure to communicate facts and position relevant to the matter by the required date may be considered when determining appropriate disciplinary action.

(6) If agreement as to appropriate disciplinary sanction, if any, can be reached with the operator and the commission concurs, a written stipulation and settlement between the department and the operator shall be entered. The stipulation and settlement shall recite the basic facts and violations alleged, any facts brought forth by the operator, and the reasons for the particular sanctions imposed.

(7) If an agreement as to appropriate disciplinary action, if any, cannot be reached, the director may initiate formal hearing procedures. Notice and formal hearing shall be in accordance with 567—Chapter 7 related to contested and certain other cases pertaining to license discipline.

**112.29(11)** Revocation of certificates. Upon revocation of a certificate, application for certification may be allowed after two years from the date of revocation. Any such applicant must successfully complete an examination and be certified in the same manner as a new applicant.

**112.29(12)** A temporary operator of a sanitary landfill or solid waste incinerator may be designated for a period of six months when an existing certified operator is no longer available to the facility. The facility must make application to the department, explain why a temporary certification is needed, identify the temporary operator, and identify the efforts which will be made to obtain a certified operator. A temporary operator designation shall not be approved for greater than a six-month period except for extenuating circumstances. In any event, not more than one six-month extension to the temporary operator designation may be granted. Approval of a temporary operator designation may be rescinded for cause as set forth in 112.29(10).

**567—112.30(455B) Emergency response and remedial action plans.**

**112.30(1)** *Purpose.* The purpose of this rule is to implement Iowa Code section 455B.306(6) “d” by providing the criteria for developing a detailed emergency response and remedial action plan (ERRAP) for permitted sanitary disposal projects.

**112.30(2)** *Applicability.* The requirements of this rule apply to the owners or operators of all sanitary landfills.

**112.30(3)** *Submittal requirements.*

*a.* The owner or operator of facilities that are subject to this rule and have been permitted prior to October 24, 2001, shall submit a complete detailed ERRAP that meets the requirements set forth in this rule no later than December 31, 2001.

*b.* Applications for a new permit after October 24, 2001, shall incorporate a complete detailed ERRAP that meets the requirements set forth in this rule.

*c.* An updated ERRAP that meets the requirements of this rule shall be submitted at the time of each permit renewal or permit reissuance application that is due after December 31, 2001.

*d.* An updated ERRAP shall be included with any request for permit modification to incorporate a facility expansion or significant changes in facility operation that require modification of the currently approved ERRAP.

*e.* Facilities that submitted an ERRAP meeting the requirements defined under Iowa Code section 455B.306(6) “d” by May 1, 2001, including regional collection centers that, prior to this date, have met the contingency plan submittal requirement described in 567—Chapter 211, and were approved by the department prior to October 24, 2001, are not required to submit an updated ERRAP that meets the requirements of this rule until the next permit renewal application due date after December 31, 2001.

*f.* Three sets of ERRAP documents shall be submitted for department approval.

**112.30(4)** *Content.* The content of ERRAP documents shall be concise and readily usable as a reference manual by facility managers and operators during emergency conditions. The ERRAP document content shall address at least the following primary issues in detail, unless project conditions render the specific issue as not applicable. The rationale for exclusion of any issue areas that are determined not to be applicable must be provided in either the body of the plan or as a supplement to facilitate department review. Additional emergency response and remedial action plan requirements unique to the facility shall be addressed, as applicable.

*a. Facility information.*

- (1) Permitted agency.
- (2) DNR permit number.
- (3) Facility description.
- (4) Responsible official and contact information.
- (5) Project location.
- (6) Site and environs map.

*b. Regulatory requirements.*

- (1) Iowa Code section 455B.306(6) “d” criteria citation.
- (2) Reference to provisions of the permit.

- c. Emergency conditions—response activities—remedial action.*
- (1) Failure of utilities.
    1. Short-term (48 hours or less).
    2. Long-term (over 48 hours).
  - (2) Weather-related events.
    1. Tornado.
    2. Windstorms.
    3. Intense rainstorms and erosion.
    4. Lightning strikes.
    5. Flooding.
    6. Event and postevent conditions.
  - (3) Fire and explosions.
    1. Waste materials.
    2. Buildings and site.
    3. Equipment.
    4. Fuels.
    5. Utilities.
    6. Facilities.
    7. Working area.
    8. Hot loads.
    9. Waste gases.
    10. Evacuation.
  - (4) Regulated waste spills and releases.
    1. Waste materials.
    2. Leachate.
    3. Waste gases.
    4. Waste stockpiles and storage facilities.
    5. Waste transport systems.
    6. Litter and airborne particulates.
    7. Site drainage systems.
    8. Off-site releases.
  - (5) Hazardous material spills and releases.
    1. Load check control points.
    2. Mixed waste deliveries.
    3. Fuels.
    4. Waste gases.
    5. Site drainage systems.
    6. Off-site releases.
  - (6) Mass movement of land and waste.
    1. Earthquakes.
    2. Slope failure.
    3. Waste shifts.
    4. Waste subsidence.
  - (7) Emergency and release notifications and reporting.
    1. Federal agencies.
    2. State agencies.
    3. County and city agencies.
    4. News media.
    5. Public and private facilities with special populations within five miles.
    6. Emergency response agencies and contact information.
    7. Reporting requirements and forms.
  - (8) Emergency waste management procedures.

1. Communications.
2. Temporary discontinuation of services—short- and long-term.
3. Facilities access and rerouting.
4. Waste acceptance.
5. Wastes in process.
- (9) Primary emergency equipment inventory.
  1. Major equipment.
  2. Fire hydrants and water sources.
  3. Off-site equipment resources.
- (10) Emergency aid.
  1. Responder contacts.
  2. Medical services.
  3. Contracts and agreements.
- (11) ERRAP training requirements.
  1. Training providers.
  2. Employee orientation.
  3. Annual training updates.
  4. Training completion and record keeping.
- (12) Reference tables, figures and maps.

**567—112.31(455B) Biosolids monofill sanitary landfill financial assurance.**

**112.31(1) Purpose.** The purpose of this rule is to implement Iowa Code sections 455B.304(8) and 455B.306(9) by providing the criteria for establishing financial assurance for closure, postclosure and corrective action at biosolids monofill sanitary landfills (BMF landfills).

**112.31(2) Applicability.** The requirements of this rule apply to all owners and operators of BMF landfills accepting waste as of October 31, 2007, except owners or operators that are state or federal government entities whose debts and liabilities are the debts and liabilities of a state or the United States.

**112.31(3) Financial assurance for closure.** The owner or operator of a BMF landfill must establish financial assurance for closure in accordance with the criteria in this rule. The owner or operator must provide continuous coverage for closure until released from this requirement by demonstrating compliance with subrules 112.26(13) and 112.13(10). Proof of compliance pursuant to paragraphs 112.31(3) “a” to “e” must be submitted by the owner or operator yearly by April 1 and approved by the department.

*a.* The owner or operator shall submit the current version of department Form 542-8090, Sanitary Landfill Financial Assurance Report Form, which contains, but is not limited to, the amount of the financial assurance, the annual financial statement required by Iowa Code sections 455B.306(9) “e” and 455B.306(7) “c,” and the current balances of the closure and postclosure accounts at the time of submittal as required by Iowa Code section 455B.306(9) “b.”

*b.* The owner or operator shall submit a copy of the financial assurance instruments or the documents establishing the financial assurance instruments in an amount equal to or greater than the amount specified in subrule 112.31(9). Documentation for the mechanism(s) used to demonstrate financial assurance shall contain, at a minimum, the items required to be submitted as specified in paragraphs 112.31(6) “a” to “i.”

*c.* The owner or operator shall submit a detailed written estimate, in current dollars, certified by an Iowa-licensed professional engineer, of the cost of hiring a third party to close the BMF landfill in accordance with the closure plan as required by subrules 112.26(13) and 112.13(10). Such estimate must be available at any time during the active life of the landfill.

(1) The cost estimate must equal the cost of closing the BMF landfill at any time during the permitted life of the facility when the extent and manner of its operation would make closure the most expensive.

(2) The costs contained in the third-party estimate for closure must be accurate and reasonable when compared to the cost estimates used by other similarly situated landfills in Iowa.

(3) During the active life of the BMF landfill, the owner or operator must annually adjust the closure cost estimate for inflation.

(4) The owner or operator must, annually or at the time of application for a permit amendment that increases closure costs, whichever occurs first, increase the closure cost estimate and the amount of financial assurance provided if changes to the closure plan or BMF landfill conditions increase the maximum cost of closure at any time during the remaining active life of the facility.

(5) The owner or operator may reduce the amount of financial assurance for closure if the most recent estimate of the maximum cost of closure at any time during the active life of the facility is less than the amount of financial assurance currently provided. Prior to the reduction, the owner or operator must submit to the department the justification for the reduction of the closure cost estimate and the updated documentation required by paragraphs 112.31(3) "a" to "e" and receive department approval for the reduction. Approval or denial shall be issued within 30 days of receipt of the reduction request.

(6) The third-party estimate submitted to the department must include the site area subject to closure and account for at least the following factors determined by the department to be minimal necessary costs for closure:

1. Closure and postclosure plan document revisions;
2. Site preparation, earthwork and final grading;
3. Drainage control culverts, piping and structures;
4. Erosion control structures, sediment ponds and terraces;
5. Final cap construction;
6. Cap vegetation soil placement;
7. Cap seeding, mulching and fertilizing;
8. Monitoring well, piezometer and gas control modifications;
9. Leachate system cleanout and extraction well modifications;
10. Monitoring well installations and abandonments;
11. Facility modifications to effect closed status;
12. Engineering and technical services;
13. Legal, financial and administrative services; and
14. Closure compliance certifications and documentation.

*d.* For publicly owned BMF landfills, the owner or operator shall submit to the department a copy of the owner's or operator's most recent annual audit report in the form prescribed by the office of the auditor of the state of Iowa.

*e.* Privately held BMF landfills shall submit an affidavit from the owner or operator indicating that a yearly review has been performed by a certified public accountant to determine whether the privately owned landfill is in compliance with this rule. The affidavit shall state the name of the certified public accountant, the dates and conclusions of the review, and the steps taken to rectify any deficiencies identified by the accountant.

**112.31(4)** *Financial assurance for postclosure.* The owner or operator of a BMF landfill must establish financial assurance for the costs of postclosure in accordance with the criteria in this rule. The owner or operator must provide continuous coverage for postclosure until released from this requirement by demonstrating compliance with the postclosure plan and the closure permit. Proof of compliance pursuant to paragraphs 112.31(4) "a" to "e" must be submitted by the owner or operator yearly by April 1 and must be approved by the department.

*a.* The owner or operator shall submit the current version of department Form 542-8090, Sanitary Landfill Financial Assurance Report Form, which contains, but is not limited to, the amount of the financial assurance, the annual financial statement required by Iowa Code sections 455B.306(9) "e" and 455B.306(7) "c," and the current balances of the closure and postclosure accounts required by Iowa Code section 455B.306(9) "b."

*b.* The owner or operator shall submit a copy of the documents establishing a financial assurance instrument in an amount equal to or greater than the amount specified in subrule 112.31(9). Documentation for the mechanism(s) used to demonstrate financial assurance shall contain, at a minimum, the items required to be submitted as specified in paragraphs 112.31(6) "a" to "i."

c. The owner or operator shall submit a detailed written estimate, in current dollars, certified by an Iowa-licensed professional engineer, of the cost of hiring a third party to conduct postclosure for the BMF landfill in compliance with the postclosure plan developed pursuant to subrules 112.26(14) and 112.13(10). The cost estimate must account for the total cost of conducting postclosure, as described in the plan, for the entire postclosure period.

(1) The cost estimate for postclosure must be based on the most expensive costs of postclosure during the entire postclosure period.

(2) The costs contained in the third-party estimate of postclosure must be accurate and reasonable when compared to the cost estimates used by other similarly situated landfills in Iowa.

(3) During the active life of the BMF landfill and during the postclosure period, the owner or operator must annually adjust the postclosure cost estimate for inflation.

(4) The owner or operator must, annually or at the time of application for a permit amendment that increases postclosure costs, whichever occurs first, increase the estimate and the amount of financial assurance provided if changes in the postclosure plan or BMF landfill conditions increase the maximum cost of postclosure.

(5) The owner or operator may reduce the amount of financial assurance for postclosure if the most recent estimate of the maximum cost of postclosure beginning at any time during the active life of the facility is less than the amount of financial assurance currently provided. Prior to the reduction, the owner or operator must submit to the department the justification for the reduction of the postclosure cost estimate and the updated documentation required by paragraphs 112.31(4)“a” to “e” and must receive department approval for the reduction. Approval or denial shall be issued within 30 days of receipt of the reduction request.

(6) The third-party estimate submitted to the department must include the site area subject to postclosure and account for at least the following factors determined by the department to be minimal necessary costs for postclosure:

1. General site facilities, access roads and fencing maintenance;
2. Cap and vegetative cover maintenance;
3. Drainage and erosion control systems maintenance;
4. Groundwater to waste separation systems maintenance;
5. Gas control systems maintenance;
6. Gas control systems monitoring and reports;
7. Groundwater and surface water monitoring systems maintenance;
8. Groundwater and surface water quality monitoring and reports;
9. Groundwater monitoring systems performance evaluations and reports;
10. Leachate control systems maintenance;
11. Leachate management, transportation and disposal;
12. Leachate control systems performance evaluations and reports;
13. Facility inspections and reports;
14. Engineering and technical services;
15. Legal, financial and administrative services; and
16. Financial assurance, accounting, audits and reports.

d. For publicly owned BMF landfills, the owner or operator shall submit to the department a copy of the owner’s or operator’s most recent annual audit report in the form prescribed by the office of the auditor of the state of Iowa.

e. Privately held BMF landfills shall submit an affidavit from the owner or operator indicating that a yearly review has been performed by a certified public accountant to determine whether the privately owned landfill is in compliance with this rule. The affidavit shall state the name of the certified public accountant, the dates and conclusions of the review, and the steps taken to rectify any deficiencies identified by the accountant.

**112.31(5) *Financial assurance for corrective action.***

a. An owner or operator required to undertake corrective action must have a detailed written estimate, in current dollars, prepared by an Iowa-licensed professional engineer, of the cost of hiring

a third party to perform the required corrective action. The estimate must account for the total costs of the activities described in the approved corrective action plan for the entire corrective action period. The owner or operator must submit to the department the estimate and financial assurance documentation within 30 days of department approval of the corrective action plan.

(1) The owner or operator must annually adjust the estimate for inflation until the corrective action plan is completed.

(2) The owner or operator must increase the cost estimate and the amount of financial assurance provided if changes in the corrective action plan or BMF landfill conditions increase the maximum cost of corrective action.

(3) The owner or operator may reduce the amount of the cost estimate and the amount of financial assurance provided if the estimate exceeds the maximum remaining costs of the remaining corrective action. The owner or operator must submit to the department the justification for the reduction of the cost estimate and documentation of financial assurance.

*b.* The owner or operator of a BMF landfill required to undertake a corrective action plan must establish financial assurance for the most recent corrective action plan by one of the mechanisms prescribed in subrule 112.31(6). The owner or operator must provide continuous coverage for corrective action until released from financial assurance requirements by demonstrating compliance with the following:

(1) Upon completion of the remedy, the owner or operator must submit to the department a certification of compliance with the approved corrective action plan. The certification must be signed by the owner or operator and by an Iowa-licensed professional engineer.

(2) Upon department approval of completion of the corrective action remedy, the owner or operator shall be released from the requirements for financial assurance for corrective action.

**112.31(6) Allowable financial assurance mechanisms.** The mechanisms used to demonstrate financial assurance as required by Iowa Code section 455B.306(9)“a” must ensure that the funds necessary to meet the costs of closure, postclosure, and corrective action for known releases will be available whenever the funds are needed. Owners or operators must choose from options in paragraphs 112.31(6)“a” to “i.”

*a. Trust fund.*

(1) An owner or operator may demonstrate financial assurance for closure, postclosure, or corrective action, whichever is applicable, by establishing a trust fund which conforms to the requirements of this subrule. The trustee must be an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or state agency. A copy of the trust agreement must be submitted pursuant to subrules 112.31(3), 112.31(4), and 112.31(5) and placed in the facility’s official files.

(2) Payments into the trust fund must be made annually by the owner or operator over ten years or over the remaining life of the BMF landfill, whichever is shorter, in the case of a trust fund for closure or postclosure; or over one-half of the estimated length of the corrective action plan in the case of a response to a known release. This period is referred to as the pay-in period.

(3) For a trust fund used to demonstrate financial assurance for closure and postclosure, the first payment into the fund must be at least equal to the amount specified in subrule 112.31(9) for closure or postclosure divided by the number of years in the pay-in period as defined in subparagraph 112.31(6)“a”(2). The amount of subsequent payments must be determined by the following formula:

$$\text{Payment} = \frac{\text{CE} - \text{CB}}{\text{Y}}$$

where CE is the amount specified in 112.31(9) for closure or postclosure (updated for inflation or other changes), CB is the current balance of the trust fund, and Y is the number of years remaining in the pay-in period.

(4) For a trust fund used to demonstrate financial assurance for corrective action, the first payment into the trust fund must be at least equal to one-half of the current cost estimate for corrective action

divided by the number of years in the corrective action pay-in period as defined in subparagraph 112.31(6)“a”(2). The amount of subsequent payments must be determined by the following formula:

$$\text{Payment} = \frac{\text{RB} - \text{CV}}{\text{Y}}$$

where RB is the most recent estimate of the required trust fund balance for corrective action, which is the total cost that will be incurred during the second half of the corrective action period, CV is the current value of the trust fund, and Y is the number of years remaining in the pay-in period.

(5) The initial payment into the trust fund must be made before the initial receipt of waste or within 30 days of close of the first fiscal year that begins after October 31, 2007, in the case of existing facilities; before the cancellation of an alternative financial assurance mechanism in the case of closure and postclosure; or no later than 120 days after the corrective action remedy has been approved by the department.

(6) The owner or operator or another person authorized to conduct closure, postclosure, or corrective action activities may request reimbursement from the trustee for these expenditures, including partial closure, as the expenditures are incurred. Requests for reimbursement will be granted by the trustee only if sufficient funds are remaining in the trust fund to cover the remaining costs of closure, postclosure, or corrective action and if justification and documentation of the costs are placed in the operating record. The owner or operator must submit to the department documentation of the justification for reimbursement and verification that reimbursement has been received.

(7) The trust fund may be terminated by the owner or operator only if the owner or operator substitutes alternative financial assurance as specified in this rule or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this rule.

(8) After the pay-in period has been completed, the trust fund shall be adjusted annually to correct any deficiency of the fund with respect to the adjusted cost estimate and may be adjusted annually should the balance in the fund exceed the adjusted cost estimate.

*b. Surety bond guaranteeing payment or performance.*

(1) An owner or operator may demonstrate financial assurance for closure or postclosure by obtaining a payment or performance surety bond which conforms to the requirements of this subrule. An owner or operator may demonstrate financial assurance for corrective action by obtaining a performance bond which conforms to the requirements of this subrule. The bond must be effective before the initial receipt of waste or before the cancellation of an alternative financial assurance mechanism, in the case of closure and postclosure; or no later than 120 days after the corrective action remedy has been approved by the department. The owner or operator must submit a copy of the bond to the department and keep a copy in the facility’s official files. The surety company issuing the bond must, at a minimum, be among those listed as acceptable sureties on federal bonds in Circular 570 of the U.S. Department of the Treasury. The state shall not be considered a party to the surety bond.

(2) The penal sum of the bond must be in an amount at least equal to the amount specified in subrule 112.31(9) for closure and postclosure or corrective action, whichever is applicable.

(3) Under the terms of the bond, the surety will become liable on the bond obligation when the owner or operator fails to perform as guaranteed by the bond and also upon notice from the department pursuant to subparagraph 112.31(6)“b”(6).

(4) The owner or operator must establish a standby trust fund. The standby trust fund must meet the requirements of paragraph 112.31(6)“a” except the requirements for initial payment and subsequent annual payments specified in subparagraphs 112.31(6)“a”(2) to (5).

(5) Payments made under the terms of the bond will be deposited by the surety directly into the standby trust fund. Payments from the trust fund must be approved by the trustee and the department.

(6) Under the terms of the bond, the surety may cancel the bond by sending notice of cancellation by certified mail to the owner or operator and to the department 120 days in advance of cancellation. When such notice is provided, the owner or operator shall, within 60 days, provide to the department adequate proof of alternative financial assurance, notice from the surety of withdrawal of the cancellation, or proof

of a deposit into the standby trust fund of a sum equal to the amount of the bond. If the owner or operator has not complied with this subparagraph within the 60-day time period, this shall constitute a failure to perform and the department shall notify the surety, prior to the expiration of the 120-day notice period, that such a failure has occurred.

(7) The bond must be conditioned upon faithful performance by the owner or operator of all closure, postclosure, or corrective action requirements of the Code of Iowa and this rule. A failure to comply with subparagraph 112.31(6) "b"(6) shall also constitute a failure to perform under the terms of the bond.

(8) Liability under the bond shall be for the duration of the operation and the closure and postclosure periods.

(9) The owner or operator may cancel the bond only if alternative financial assurance is substituted prior to cancellation or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this rule.

*c. Letter of credit.*

(1) An owner or operator may demonstrate financial assurance for closure, postclosure, or corrective action, whichever is applicable, by obtaining an irrevocable standby letter of credit which conforms to the requirements of this paragraph. The letter of credit must be effective before the initial receipt of waste or before the cancellation of an alternative financial assurance mechanism, in the case of closure and postclosure; or no later than 120 days after the corrective action plan is approved by the department. The owner or operator must submit to the department a copy of the letter of credit and place a copy in the facility's official files. The issuing institution must be an entity which has the authority to issue letters of credit and whose letter-of-credit operations are regulated and examined by a federal or state agency.

(2) A letter from the owner or operator referring to the letter of credit by number, issuing institution, and date, and providing the name and address of the facility and the amount of funds assured, must be included with the letter of credit submitted to the department and placed in the facility's files.

(3) The letter of credit must be irrevocable and must be issued for a period of at least one year in an amount at least equal to the amount specified in subrule 112.31(9) for closure, postclosure, or corrective action, whichever is applicable. The letter of credit must provide that the expiration date will be automatically extended for a period of at least one year unless the issuing institution has canceled the letter of credit by sending notice of cancellation by certified mail to the owner or operator and to the department 120 days in advance of cancellation. When such notice is provided, the owner or operator shall, within 60 days, provide to the department adequate proof of alternative financial assurance, notice of withdrawal of cancellation, or proof of a deposit of a sum equal to the amount of the letter of credit into the closure and postclosure accounts established pursuant to Iowa Code section 455B.306(9) "b." If the owner or operator has not complied with this subparagraph within the 60-day time period, the issuer of the letter of credit shall deposit a sum equal to the amount of the letter of credit into the closure and postclosure accounts established by the owner or operator pursuant to Iowa Code section 455B.306(9) "b." The provision of funds by the issuer of the letter of credit shall be considered an issuance of a loan to the owner or operator, and the terms of that loan shall be governed by the letter of credit or subsequent agreement between those parties. The state shall not be considered a party to this credit transaction.

(4) The owner or operator may cancel the letter of credit only if alternative financial assurance is substituted prior to cancellation or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this rule.

*d. Insurance.*

(1) An owner or operator may demonstrate financial assurance for closure, postclosure, or corrective action by obtaining insurance which conforms to the requirements of this paragraph. The insurance must be effective before the initial receipt of waste or prior to cancellation of an alternative financial assurance, in the case of closure and postclosure; or no later than 120 days after the corrective action plan has been approved by the department. At a minimum, the insurer must be licensed to transact the business of insurance or be eligible to provide insurance as an excess or surplus lines insurer

in one or more states. The owner or operator must submit to the department a copy of the insurance policy and retain a copy in the facility's official files.

(2) The closure or postclosure insurance policy must guarantee that funds will be available to close the BMF landfill whenever final closure occurs or to provide postclosure for the BMF landfill whenever the postclosure period begins, whichever is applicable. The policy must also guarantee that once closure or postclosure begins, the insurer will be responsible for the paying out of funds to the owner or operator or another person authorized to conduct closure or postclosure, up to an amount equal to the face amount of the policy.

(3) The insurance policy must be issued for a face amount at least equal to the amount specified in subrule 112.31(9) for closure, postclosure, or corrective action, whichever is applicable. The term "face amount" means the total amount the insurer is obligated to pay under the policy. Actual payments by the insurer will not change the face amount, although the insurer's future liability will be lowered by the amount of the payments.

(4) An owner or operator or another person authorized to conduct closure or postclosure may receive reimbursements for closure or postclosure expenditures, including partial closure, as applicable. Requests for reimbursement will be granted by the insurer only if the remaining value of the policy is sufficient to cover the remaining costs of closure or postclosure, and if justification and documentation of the cost are placed in the operating record. The owner or operator must submit to the department documentation of the justification for reimbursement and verification that the reimbursement has been received.

(5) Each policy must contain a provision allowing assignment of the policy to a successor owner or operator. Such assignment may be conditional upon consent of the insurer, provided that such consent is not unreasonably refused.

(6) The insurance policy must provide that the insurer may not cancel, terminate or fail to renew the policy except for failure to pay the premium. The automatic renewal of the policy must, at a minimum, provide the insured with the option of renewal at the face amount of the expiring policy. If there is a failure to pay the premium, the insurer may cancel the policy by sending notice of cancellation by certified mail to the owner or operator and to the department 120 days in advance of cancellation. When such notice is provided, the owner or operator shall, within 60 days, provide to the department adequate proof of alternative financial assurance, notice from the insurer of withdrawal of cancellation, or proof of a deposit of a sum equal to the amount of the insurance coverage into the closure and postclosure accounts established pursuant to Iowa Code section 455B.306(9) "b." If the owner or operator has not complied with this subparagraph within the 60-day time period, this shall constitute a failure to perform and shall be a covered event pursuant to the terms of the insurance policy. A failure by the owner or operator to comply with this subparagraph within the 60-day period shall make the insurer liable for the closure and postclosure of the covered facility up to the amount of the policy limits, which shall be equal to the most recently submitted cost estimates.

(7) For insurance policies providing coverage for postclosure, commencing on the date that liability to make payments pursuant to the policy accrues, the insurer will thereafter annually increase the face amount of the policy. Such increase must be equivalent to the face amount of the policy, less any payments made, multiplied by an amount equivalent to 85 percent of the most recent investment rate or of the equivalent coupon-issue yield announced by the U.S. Department of the Treasury for 26-week treasury securities.

(8) The owner or operator may cancel the insurance only if alternative financial assurance is substituted prior to cancellation or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this rule.

*e. Corporate financial test.* An owner or operator that satisfies the requirements of this paragraph may demonstrate financial assurance up to the amount specified below:

(1) Financial component. The owner or operator must satisfy the requirements of numbered paragraphs 112.31(6) "e" (1) "1," "2" and "3" to meet the financial component of the corporate financial test.

1. The owner or operator must satisfy one of the following three conditions:

- A current rating for its senior unsubordinated debt of AAA, AA, A, or BBB as issued by Standard & Poor's or Aaa, Aa, A, or Baa as issued by Moody's; or
- A ratio of less than 1.5 comparing total liabilities to net worth (net worth calculations may not include future permitted capacity of the subject landfill as an asset); or
- A ratio of greater than 0.10 comparing the sum of net income plus depreciation, depletion and amortization, minus \$10 million, to total liabilities;

2. The tangible net worth, excluding future permitted capacity of the subject landfill, of the owner or operator must be greater than:

- The sum of the current closure, postclosure, and corrective action cost estimates and any other environmental obligations, including guarantees, covered by this financial test plus \$10 million except as provided in the second bulleted paragraph in numbered paragraph 112.31(6) "e"(1)"2"; or

- Net worth of \$10 million, excluding future permitted capacity of the subject landfill, plus the amount of any guarantees that have not been recognized as liabilities on the financial statements, provided that all of the current closure, postclosure, and corrective action costs and any other environmental obligations covered by a financial test are recognized as liabilities on the owner's or operator's audited financial statements and are subject to the approval of the department; and

3. The owner or operator must have, located in the United States, assets, excluding future permitted capacity of the subject landfill, amounting to at least the sum of current closure, postclosure, and corrective action cost estimates and any other environmental obligations covered by a financial test as described in subparagraph 112.31(6) "e"(5).

(2) Record-keeping and reporting requirements. The owner or operator must submit the following records to the department and place a copy in the facility's official files prior to the initial receipt of solid waste or cancellation of an alternative financial assurance instrument, in the case of closure and postclosure; or no later than 120 days after the corrective action plan has been approved by the department:

1. A letter signed by a certified public accountant and based upon a certified audit that:

- Lists all the current cost estimates covered by a financial test including, but not limited to, cost estimates required by subrules 112.31(3) to 112.31(5); cost estimates required for municipal solid waste management facilities pursuant to 40 CFR Part 258; cost estimates required for UIC facilities under 40 CFR Part 144, if applicable; cost estimates required for petroleum underground storage tank facilities under 40 CFR Part 280, if applicable; cost estimates required for PCB storage facilities under 40 CFR Part 761, if applicable; and cost estimates required for hazardous waste treatment, storage, and disposal facilities under 40 CFR Parts 264 and 265, if applicable; and

- Provides evidence demonstrating that the owner or operator meets the conditions of subparagraph 112.31(6) "e"(1).

2. A copy of the independent certified public accountant's unqualified opinion of the owner's or operator's financial statements for the latest completed fiscal year. To be eligible to use the financial test, the owner's or operator's financial statements must receive an unqualified opinion from the independent certified public accountant. An adverse opinion or disclaimer of opinion shall be cause for disallowance of this mechanism. A qualified opinion related to the demonstration of financial assurance may, at the discretion of the department, be cause for disallowance. If the department does not allow use of the corporate financial test, the owner or operator must provide alternative financial assurance that meets the requirements of this rule.

3. If the certified public accountant's letter providing evidence of financial assurance includes financial data which shows that the owner or operator satisfies subparagraph 112.31(6) "e"(1) but which differs from data in the audited financial statements referred to in numbered paragraph 112.31(6) "e"(2)"2," then a special report from the owner's or operator's independent certified public accountant to the owner or operator is required. The special report shall be based upon an agreed-upon procedures engagement in accordance with professional auditing standards and shall describe the procedures performed in comparing the data in the certified public accountant's letter derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements, the findings of that comparison, and the reasons for any differences.

4. If the certified public accountant's letter provides a demonstration that the owner or operator has assured for environmental obligations as provided in the second bulleted paragraph of numbered paragraph 112.31(6) "e"(2) "1," then the letter shall include a report from the independent certified public accountant that verifies that all of the environmental obligations covered by a financial test have been recognized as liabilities on the audited financial statements and that documents how these obligations have been measured and reported and verifies that the tangible net worth of the owner or operator is at least \$10 million plus the amount of any guarantees provided.

(3) The owner or operator may cease the submission of the information required by paragraph 112.31(6) "e" only if alternative financial assurance is substituted prior to cancellation or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this rule.

(4) The department may, based on a reasonable belief that the owner or operator may no longer meet the requirements of subparagraph 112.31(6) "e"(1), require the owner or operator to provide reports of its financial condition in addition to or including current financial test documentation as specified in subparagraph 112.31(6) "e"(2). If the department finds that the owner or operator no longer meets the requirements of subparagraph 112.31(6) "e"(1), the owner or operator must provide alternative financial assurance that meets the requirements of this rule.

(5) Calculation of costs to be assured. When calculating the current cost estimates for closure, postclosure, corrective action, or the sum of the combination of such costs to be covered, and any other environmental obligations assured by a financial test referred to in paragraph 112.31(6) "e," the owner or operator must include cost estimates required for subrules 112.31(3) to 112.31(5); cost estimates for municipal solid waste management facilities pursuant to 40 CFR Section 258.74; and cost estimates required for the following environmental obligations, if the owner or operator assures those environmental obligations through a financial test: obligations associated with UIC facilities under 40 CFR Part 144, petroleum underground storage tank facilities under 40 CFR Part 280, PCB storage facilities under 40 CFR Part 761, and hazardous waste treatment, storage, and disposal facilities under 40 CFR Parts 264 and 265.

*f. Local government financial test.* An owner or operator that satisfies the requirements of this paragraph may demonstrate financial assurance up to the amount specified below:

(1) Financial component.

1. The owner or operator must satisfy one of the following requirements:

- If the owner or operator has outstanding, rated, general obligation bonds that are not secured by insurance, a letter of credit, or other collateral or guarantee, the owner or operator must have a current rating of Aaa, Aa, A, or Baa, as issued by Moody's, or AAA, AA, A, or BBB, as issued by Standard & Poor's, on all such general obligation bonds; or

- The owner or operator must satisfy both of the following financial ratios based on the owner's or operator's most recent audited annual financial statement: a ratio of cash plus marketable securities to total expenditures greater than or equal to 0.05, and a ratio of annual debt service to total expenditures less than or equal to 0.20.

2. The owner or operator must prepare its financial statements in conformity with generally accepted accounting principles or other comprehensive basis of accounting and have its financial statements audited by an independent certified public accountant or the office of the auditor of the state of Iowa. The financial statement shall be in the form prescribed by the office of the auditor of the state of Iowa.

3. A local government is not eligible to assure its obligations in paragraph 112.31(6) "f" if it:

- Is currently in default on any outstanding general obligation bonds; or
- Has any outstanding general obligation bonds rated lower than Baa as issued by Moody's or BBB as issued by Standard & Poor's; or
- Operated at a deficit equal to 5 percent or more of total annual revenue in each of the past two fiscal years; or
- Receives an adverse opinion or disclaimer of opinion from the independent certified public accountant or office of the auditor of the state of Iowa auditing its financial statement as required under

numbered paragraph 112.31(6) “f”(1)“2.” A qualified opinion that is related to the demonstration of financial assurance may, at the discretion of the department, be cause for disallowance of this mechanism.

4. The following terms used in this paragraph are defined as follows:

“*Cash plus marketable securities*” means all the cash plus marketable securities held by the local government on the last day of a fiscal year, excluding cash and marketable securities designated to satisfy past obligations such as pensions.

“*Debt service*” means the amount of principal and interest due on a loan in a given time period, typically the current year.

“*Deficit*” means total annual revenues minus total annual expenditures.

“*Total expenditures*” means all expenditures, excluding capital outlays and debt repayment.

“*Total revenues*” means revenues from all taxes and fees, excluding revenue from funds managed by local government on behalf of a specific third party, and does not include the proceeds from borrowing or asset sales.

(2) Public notice component. The local government owner or operator must include disclosure of the closure and postclosure costs assured through the financial test in its next annual audit report prior to the initial receipt of waste at the facility or prior to cancellation of an alternative financial assurance mechanism, whichever is later. A reference to corrective action costs must be placed in the next annual audit report after the corrective action plan is approved by the department. For the first year the financial test is used to assure costs at a particular facility, the reference may instead be placed in the facility’s official files until issuance of the next available annual audit report if timing does not permit the reference to be incorporated into the most recently issued annual audit report or budget. For closure and postclosure costs, conformance with Governmental Accounting Standards Board Statement 18 ensures compliance with this public notice component.

(3) Record-keeping and reporting requirements.

1. The local government owner or operator must submit to the department the following items:

- A letter signed by the local government’s chief financial officer that lists all the current cost estimates covered by a financial test, as described in subparagraph 112.31(6) “f”(4); that provides evidence and certifies that the local government meets the conditions of numbered paragraphs 112.31(6) “f”(1)“1,” “2,” and “3”; and that certifies that the local government meets the conditions of subparagraphs 112.31(6) “f”(2) and (4); and

- The local government’s annual financial report indicating compliance with the financial ratios required by numbered paragraph 112.31(6) “f”(1)“1,” second bulleted paragraph, if applicable, and the requirements of numbered paragraph 112.31(6) “f”(1)“2” and the third and fourth bulleted paragraphs of numbered paragraph 112.31(6) “f”(1)“3,” and also indicating that the requirements of Governmental Accounting Standards Board Statement 18 have been met.

2. The items required in numbered paragraph 112.31(6) “f”(3)“1” must be submitted to the department and placed in the facility’s official files prior to the receipt of waste or prior to the cancellation of an alternative financial assurance mechanism, in the case of closure and postclosure; or, in the case of corrective action, not later than 120 days after the corrective action plan is approved by the department

3. After the initial submission of the required items and their placement in the facility’s official files, the local government owner or operator must update the information and place the updated information in the facility’s official files within 180 days following the close of the owner’s or operator’s fiscal year

4. The owner or operator may cease the submission of the information required by paragraph 112.31(6) “f” only if alternative financial assurance is substituted prior to cancellation or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this rule.

5. A local government must satisfy the requirements of the financial test at the close of each fiscal year. If the local government owner or operator no longer meets the requirements of the local government financial test, the local government must, within 180 days following the close of the owner’s or operator’s fiscal year, obtain alternative financial assurance that meets the requirements of this rule, place the required submissions for that assurance in the operating record, and notify the department

that the owner or operator no longer meets the criteria of the financial test and that alternative financial assurance has been obtained.

6. The department, based on a reasonable belief that the local government owner or operator may no longer meet the requirements of the local government financial test, may require additional reports of financial conditions from the local government. If the department finds, on the basis of such reports or other information, that the owner or operator no longer meets the requirements of the local government financial test, the local government must provide alternative financial assurance in accordance with this rule.

(4) Calculation of costs to be assured. The portion of the closure, postclosure, or corrective action costs which an owner or operator may assure under this paragraph is determined as follows:

1. If the local government owner or operator does not assure other environmental obligations through a financial test, the owner or operator may assure closure, postclosure, and corrective action costs that equal up to 43 percent of the local government's total annual revenue.

2. If the local government assures other environmental obligations through a financial test, including those associated with UIC facilities under 40 CFR Section 144.62, petroleum underground storage tank facilities under 40 CFR Part 280, PCB storage facilities under 40 CFR Part 761, and hazardous waste treatment, storage, and disposal facilities under 40 CFR Parts 264 and 265, the owner or operator must add those costs to the closure, postclosure, and corrective action costs it seeks to assure under this paragraph. The total that may be assured must not exceed 43 percent of the local government's total annual revenue.

3. The owner or operator must obtain an alternative financial assurance instrument for those costs that exceed the limits set in numbered paragraphs 112.31(6) "f"(4) "1" and "2."

*g. Corporate guarantee.*

(1) An owner or operator may meet the requirements of this paragraph by obtaining a written guarantee. The guarantor must be the direct or higher-tier parent corporation of the owner or operator, an owner or operator whose parent corporation is also the parent corporation of the owner or operator, or an owner or operator with a "substantial business relationship" with the owner or operator. The guarantor must meet the requirements for owners or operators in paragraph 112.31(6) "e" and must comply with the terms of the guarantee. A certified copy of the guarantee must be placed in the facility's operating record along with copies of the letter from a certified public accountant and the accountant's opinions. If the guarantor's parent corporation is also the parent corporation of the owner or operator, the letter from the certified public accountant must describe the value received in consideration of the guarantee. If the guarantor is an owner or operator with a "substantial business relationship" with the owner or operator, this letter must describe this "substantial business relationship" and the value received in consideration of the guarantee.

(2) The guarantee must be effective and all required submissions made to the department prior to the initial receipt of waste or before cancellation of an alternative financial mechanism, in the case of closure and postclosure; or, in the case of corrective action, no later than 120 days after the corrective action plan has been approved by the department.

(3) The terms of the guarantee must provide that:

1. If the owner or operator fails to perform closure, postclosure, or corrective action of a facility covered by the guarantee, or fails to obtain alternative financial assurance within 90 days of notice of intent to cancel pursuant to numbered paragraphs 112.31(6) "g"(3) "2" and "3," the guarantor will:

- Perform, or pay a third party to perform, closure, postclosure, or corrective action as required (performance guarantee); or
- Establish a fully funded trust fund as specified in paragraph 112.31(6) "a" in the name of the owner or operator (payment guarantee); or
- Obtain alternative financial assurance as required by numbered paragraph 112.31(6) "g"(3) "3."

2. The guarantee will remain in force for as long as the owner or operator must comply with the applicable financial assurance requirements of this rule unless the guarantor sends prior notice of cancellation by certified mail to the owner or operator and to the department. Cancellation may not

occur, however, during the 120 days beginning on the date of receipt of the notice of cancellation by both the owner or operator and the department, as evidenced by the return receipts.

3. If notice of cancellation is given, the owner or operator must, within 90 days following receipt of the cancellation notice by the owner or operator and the department, provide to the department adequate proof of alternative financial assurance, notice from the guarantor of withdrawal of the cancellation, or proof of the establishment of a fully funded trust fund pursuant to paragraph 112.31(6)“a.” If the owner or operator fails to comply with the provisions of this numbered paragraph within the 90-day period, the guarantor must provide that alternative financial assurance prior to cancellation of the corporate guarantee.

(4) If a corporate guarantor no longer meets the requirements of paragraph 112.31(6)“e,” the owner or operator must, within 90 days, obtain alternative financial assurance and submit proof of alternative financial assurance to the department. If the owner or operator fails to provide alternative financial assurance within the 90-day period, the guarantor must provide that alternative financial assurance within the next 30 days.

(5) The owner or operator is no longer required to meet the requirements of paragraph 112.31(6)“g” upon the submission to the department of proof of the substitution of alternative financial assurance or if the owner or operator is no longer required to demonstrate financial responsibility in accordance with this rule.

*h. Local government guarantee.* An owner or operator may demonstrate financial assurance for closure, postclosure, or corrective action by obtaining a written guarantee provided by a local government or jointly provided by the members of an agency established pursuant to Iowa Code chapter 28E. The guarantor must meet the requirements of the local government financial test in paragraph 112.31(6)“f” and must comply with the terms of a written guarantee.

(1) Terms of the written guarantee. The guarantee must be effective before the initial receipt of waste or before the cancellation of alternative financial assurance, in the case of closure and postclosure; or no later than 120 days after the corrective action plan is approved by the department. The guarantee must provide that:

1. If the owner or operator fails to perform closure, postclosure, or corrective action of a facility covered by the guarantee or fails to obtain alternative financial assurance within 90 days of notice of intent to cancel pursuant to numbered paragraphs 112.31(6)“h”(1)“2” and “3,” the guarantor will:

- Perform, or pay a third party to perform, closure, postclosure, or corrective action as required; or
- Establish a fully funded trust fund as specified in paragraph 112.31(6)“a” in the name of the owner or operator; or
- Obtain alternative financial assurance as required by numbered paragraph 112.31(6)“h”(1)“3.”

2. The guarantee will remain in force for as long as the owner or operator must comply with the applicable financial assurance requirements unless the guarantor sends notice of cancellation by certified mail to the owner or operator and to the department. Cancellation may not occur, however, during the 120 days beginning on the date of receipt of the notice of cancellation by both the owner or operator and the department, as evidenced by the return receipts.

3. If notice of cancellation is given, the owner or operator must, within 90 days following receipt of the cancellation notice by the owner or operator and the department, provide to the department adequate proof of alternative financial assurance, notice from the guarantor of withdrawal of the cancellation, or proof of the establishment of a fully funded trust fund pursuant to paragraph 112.31(6)“a.” If the owner or operator fails to comply with the provisions of this numbered paragraph within the 90-day period, the guarantor must provide that alternative financial assurance prior to cancellation of the guarantee.

(2) Record-keeping and reporting requirements.

1. The owner or operator must submit to the department a certified copy of the guarantee along with the items required under subparagraph 112.31(6)“f”(3) and place a copy in the facility’s official files before the initial receipt of waste or before cancellation of alternative financial assurance, whichever is later, in the case of closure and postclosure; or no later than 120 days after the corrective action plan has been approved by the department.

2. The owner or operator shall no longer be required to submit the items specified in numbered paragraph 112.31(6) "h"(2)"1" when proof of alternative financial assurance has been submitted to the department or the owner or operator is no longer required to provide financial assurance pursuant to this rule.

3. If a local government guarantor no longer meets the requirements of paragraph 112.31(6) "f," the owner or operator must, within 90 days, submit to the department proof of alternative financial assurance. If the owner or operator fails to obtain alternative financial assurance within the 90-day period, the guarantor must provide that alternative financial assurance within the next 30 days.

*i. Local government dedicated fund.* The owner or operator of a publicly owned BMF landfill or a local government serving as a guarantor may demonstrate financial assurance for closure, postclosure, or corrective action, whichever is applicable, by establishing a dedicated fund or account that conforms to the requirements of this paragraph. A dedicated fund will be considered eligible if it complies with subparagraph 112.31(6) "i"(1) or (2) and all other provisions of this paragraph and if documentation of this compliance has been submitted to the department.

(1) The fund shall be dedicated by state constitutional provision or local government statute, charter, ordinance, or order to pay for closure, postclosure, or corrective action costs arising from the operation of the BMF landfill and shall be funded for the full amount of coverage or funded for part of the required amount of coverage and used in combination with another mechanism(s) that provides the remaining coverage.

(2) The fund shall be dedicated by state constitutional provision or local government statute, charter, ordinance, or order as a reserve fund and shall be funded for no less than the full amount of coverage or funded for part of the required amount of coverage and used in combination with another mechanism(s) that provides the remaining coverage.

(3) Payments into the dedicated fund must be made annually by the owner or operator for ten years or over the permitted life of the BMF landfill, whichever is shorter, in the case of a dedicated fund for closure or postclosure; or over one-half of the estimated length of an approved corrective action plan in the case of a response to a known release. This is referred to as the pay-in period. The initial payment into the dedicated fund must be made before the initial receipt of waste in the case of closure and postclosure or no later than 120 days after the corrective action plan has been approved by the department.

(4) For a dedicated fund used to demonstrate financial assurance for closure and postclosure, the first payment into the fund must be at least equal to the amount specified in subrule 112.31(9), divided by the number of years in the pay-in period as defined in paragraph 112.31(6) "i." The amount of subsequent payments must be determined by the following formula:

$$\text{Payment} = \frac{\text{CE} - \text{CB}}{\text{Y}}$$

where CE is the total required financial assurance for the owner or operator, CB is the current balance of the fund, and Y is the number of years remaining in the pay-in period.

(5) For a dedicated fund used to demonstrate financial assurance for corrective action, the first payment into the dedicated fund must be at least one-half of the current cost estimate, divided by the number of years in the corrective action pay-in period as defined in 112.31(6) "i." The amount of subsequent payments must be determined by the following formula:

$$\text{Payment} = \frac{\text{RB} - \text{CF}}{\text{Y}}$$

where RB is the most recent estimate of the required dedicated fund balance, which is the total cost that will be incurred during the second half of the corrective action period, CF is the current amount in the dedicated fund, and Y is the number of years remaining in the pay-in period.

(6) The initial payment into the dedicated fund must be made before the initial receipt of waste or within 30 days of close of the first fiscal year that begins after October 31, 2007, in the case of existing facilities; before the cancellation of an alternative financial assurance mechanism in the case of closure and postclosure; or no later than 120 days after the corrective action remedy has been approved by the department.

(7) After the pay-in period has been completed, the dedicated fund shall be adjusted annually to correct any deficiency of the fund with respect to the adjusted cost estimates and may be adjusted annually should the balance in the fund exceed the adjusted cost estimate.

**112.31(7) General requirements.**

a. Use of multiple financial mechanisms. An owner or operator may satisfy the requirements of this rule by establishing more than one financial mechanism per facility. The mechanisms must be a combination of those mechanisms outlined in this rule and must provide financial assurance for an amount at least equal to the current cost estimate for closure, postclosure, or corrective action, whichever is applicable. The financial test and a guarantee provided by a corporate parent, sibling or grandparent may not be combined if the financial statements of the two entities are consolidated.

b. Use of one mechanism for multiple facilities. An owner or operator may satisfy the requirements of this rule for multiple BMF landfills by the use of one mechanism if the owner or operator ensures that the mechanism provides financial assurance for an amount at least equal to the current cost estimates for closure, postclosure, or corrective action, whichever is applicable, for all BMF landfills covered.

c. Criteria. The language of the financial assurance mechanisms listed in this rule must ensure that the instruments satisfy the following criteria:

(1) The financial assurance mechanisms must ensure that the amount of funds assured is sufficient to cover the costs of closure, postclosure, or corrective action for known releases, whichever is applicable;

(2) The financial assurance mechanisms must ensure that funds will be available in a timely fashion when needed;

(3) The financial assurance mechanisms must be obtained by the owner or operator prior to the initial receipt of solid waste and no later than 120 days after the corrective action remedy has been approved by the department until the owner or operator is released from the financial assurance requirements; and

(4) The financial assurance mechanisms must be legally valid, binding, and enforceable under Iowa law.

d. No permit shall be issued by the department pursuant to Iowa Code section 455B.305 unless the applicant has demonstrated compliance with rule 112.31(455B).

**112.31(8) Closure and postclosure accounts.** The holder of a permit for a BMF landfill shall maintain a separate account for closure and postclosure as required by Iowa Code section 455B.306(9)“b.” The account shall be specific to a particular facility.

a. Definitions. For the purpose of this subrule, the following definitions shall apply:

“Account” means a formal separate set of records.

“Current balance” means cash in an account established pursuant to this subrule plus the current value of investments of moneys collected pursuant to subrule 112.31(8) and used to purchase one or more of the investments listed at Iowa Code section 12B.10(5).

“Current cost estimate” means the closure cost estimate prepared and submitted to the department pursuant to subrule 112.31(3) and the postclosure cost estimate prepared and submitted pursuant to subrule 112.31(4).

b. Moneys in the accounts shall not be assigned for the benefit of creditors except the state of Iowa.

c. Moneys in the accounts shall not be used to pay any final judgment against a permit holder arising out of the ownership or operation of the site during its active life or after closure.

d. Withdrawal of funds. Except as provided in paragraph 112.31(8)“e,” moneys in the accounts may be withdrawn without department approval only for the purpose of funding closure, including partial closure, or postclosure activities that are in conformance with a closure/postclosure plan which has been submitted pursuant to subrule 112.13(10). Withdrawals for activities not in conformance with a closure/postclosure plan must receive prior written approval from the department. Permit holders using a trust fund established pursuant to paragraph 112.31(6)“a” to satisfy the requirements of this rule must comply with the requirements of subparagraph 112.31(6)“a”(6) prior to withdrawal.

e. Excess funds. If the balance of a closure or postclosure account exceeds the current cost estimate for closure or postclosure at any time, the permit holder may withdraw the excess funds so long as the withdrawal does not cause the balance to be reduced below the amount of the current cost estimate.

f. Initial proof of establishment of account. A permit holder shall submit a statement of account, signed by the permit holder, to the department by April 1, 2008, that indicates that accounts have been established pursuant to this subrule. Permit holders for new BMF landfills permitted after April 1, 2008, shall submit to the department, prior to the landfill’s initial receipt of waste, a statement of account that is signed by the permit holder.

g. An account established pursuant to paragraph 112.31(6)“a” for trust funds or paragraph 112.31(6)“i” for local government dedicated funds also satisfies the requirements of this subrule, and the permit holder shall not be required to establish closure and postclosure accounts in addition to said financial assurance accounts.

Accounts established pursuant to paragraph 112.31(6)“a” or 112.31(6)“i,” which are intended to satisfy the requirements of this subrule, must comply with Iowa Code section 455B.306(9)“b.”

h. Yearly deposits. Deposits into the closure and postclosure accounts shall be made at least yearly in the amounts specified in this subrule beginning with the close of the facility’s first fiscal year that begins after October 31, 2007. The deposits shall be made within 30 days of the close of each fiscal year. The minimum yearly deposit to the closure and postclosure accounts shall be determined using the following formula:

$$\frac{CE - CB}{RPC} \times TR = \text{yearly deposit to account}$$

Where:

“CE” means the current cost estimate of closure and postclosure costs.

“CB” means the current balance of the closure or postclosure accounts.

“RPC” means the remaining permitted capacity, in tons, of the landfill as of the start of the permit holder’s fiscal year.

“TR” is the number of tons of solid waste disposed of at the facility in the prior year.

i. Closure and postclosure accounts may be commingled with other accounts so long as the amounts credited to each account balance are reported separately pursuant to paragraphs 112.31(3)“a” and 112.31(4)“a.”

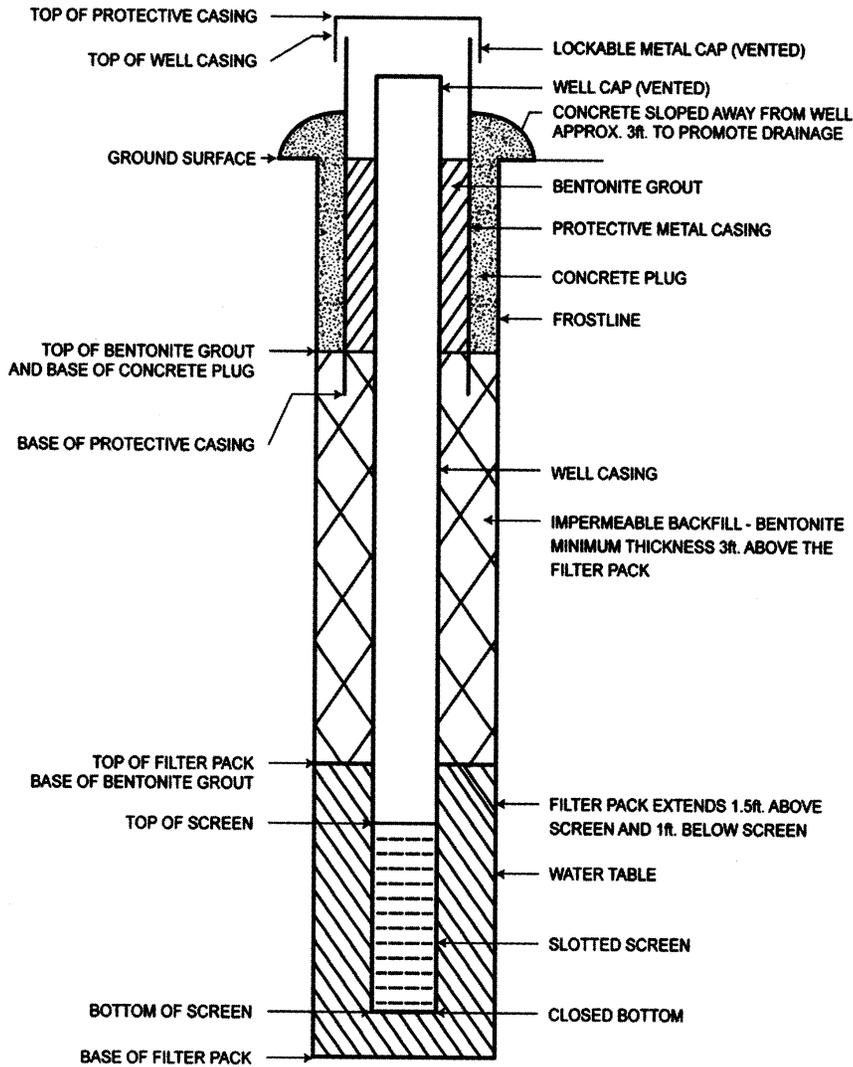
j. The department shall have full rights of access to all funds existing in a facility’s closure or postclosure account, at the sole discretion of the department, if the permit holder fails to undertake closure or postclosure activities after being directed to do so by a final agency action of the department. These funds shall be used only for the purposes of funding closure and postclosure activities at the site.

**112.31(9) Amount of required financial assurance.** A financial assurance mechanism established pursuant to subrule 112.31(6) shall be in the amount of the third-party cost estimates required by subrules 112.31(3), 112.31(4), and 112.31(5) except that the amount of the financial assurance may be reduced by the sum of the cash balance in a trust fund or local government dedicated fund established to comply

with subrule 112.31(8) plus the current value of investments held by said trust fund or local government dedicated fund if invested in one or more of the investments listed in Iowa Code section 12B.10(5).

These rules are intended to implement Iowa Code section 455B.304.

Figure 1  
Typical Monitoring Well Cross Section



-- NOT TO SCALE --

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